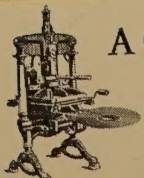
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THE CHRISTIAN HERALD
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Pescherais, a tribe of Indians, inhabiting Tierra del Fuego, and both borders of the Straits of Magellan, from the island of Elizabeth and Port Famine, toward the E. as far as the group of islands which spread out to the N. and S. of the Straits of Magellan. Their complexion is olive, and they have huge forms and large chests, though otherwise well formed. They are a nomadic people, and only subsist by the chase and fishing.

Peschito, or **Peshito,** the old Syriac version of the Scriptures, made probably about 200 A. D. The Old Testament, as well as the New, seems to have been translated by one or more Christians, not by Jews. The former was made apparently from the Hebrew, the latter from the Greek. The Second and Third Epistles of John, Second Epistle of Peter, Jude, and the Revelation are wanting. The apocryphal books were not in the original edition, but they were added at an early date. The Peschito is of great value for critical purposes.

Peseta, the Spanish money unit, equivalent to a franc.

Peso, a silver coin and money of account used in Mexico and other parts of Spanish America, and often considered equivalent to a dollar.

Pessimism, that mental attitude which induces one to give preponderating importance to the evils and sorrows of existence; the habit of taking a gloomy and desponding view of things.

Pestalozzi, Johann Heinrich, a Swiss philanthropist and educational reformer; born in 1746; first studied theology, then law; and subsequently became concerned in a calico manufactory. Afterward he devoted his time and substance to training children whom he collected in large numbers in his own house, and this good work he carried on for over 20 years without outside aid or even sympathy. The want of means at last compelled him to abandon his gratuitous institution, and to seek pupils who could pay for their maintenance and instruction. After a few years' successful teaching in various places he opened a school in the Castle of Yverdun (canton Vaud), which the government had placed at his disposal. His novel "Lienhardt and Gertrud" exerted a powerful moral influence, while his educational treatises have laid the foundation for the more rational system of elementary instruction which now obtains in America and Europe. He died in 1827.

Peter, the Greek surname of an apostle of Jesus. It is the rendering of the East Aramæan kepha, a corruption or derivation from Heb. keph = a rock, and was given by Jesus. Transliterated into Greek, with a termination, it became Kephas. Peter's real name was Simon, his father's Jonas, his brother's Andrew. Peter was of an impulsive temperament, generous, but too forward in speech, and rash in action. After the Ascension, he was for a time the most prominent of the apostles, and though specially sent to the Jews, yet had the privilege of being the first to admit Gentiles into the Church. Afterward he was somewhat cast into the shade by the eminence of St. Paul and on one occasion dissembling his liberal views when in narrow Judaic company, was

withstood by St. Paul to the face "because he was to be blamed" (Gal. ii: 11). Tradition makes him die as a martyr at Rome, about A. D. 64, crucified with his head downward. Roman Catholics claim him as the first Bishop of Rome, and consider that the authority delegated him by Jesus appertains also to his successors, the Popes of Rome.

The First Epistle General of Peter, an epistle which claims to have been written by the Apostle Peter, apparently from Babylon, "to the strangers scattered throughout Pontus, Galatia, Cappadocia, Asia, and Bithynia," all places in Asia Minor. These strangers were obviously Christian converts, the majority apparently Gentiles. There is strong evidence for its authenticity, which has rarely been doubted.

The Second Epistle of Peter, another epistle claiming to have been penned by the Apostle, the author also referring to the transfiguration scene as one which he personally witnessed, and to a previous epistle. In this second letter he seeks to establish Christians in the faith, warns them against false teachers, and predicts the general conflagration of the world. Its style is different from that of the first. The evidence for its authenticity is much less strong than that for the first epistle. Clement of Alexandria seems to have known it. It is not in the Peschito; Cyprian ignored it; Origen and Eusebius placed it among the controverted writings, but it gradually obtained acceptance before the close of the 4th century.

Peter, Alexeievitch, usually styled Peter the Great, Czar of Russia; born in 1672; and in 1689 he obtained the sole authority, on the retirement of his brother Ivan, with whom he had been before associated in the government of the empire. After having suppressed a conspiracy of the Strelitz against his life, in which he displayed much personal courage, he traveled in foreign countries, not in the character of czar, but as a member of an embassy. At Amsterdam he worked, incognito, in a shipyard, went to the village of Saardam, where he caused himself to be enrolled among the workmen, under the name of Peter Michaeloff. Here he lived in a little hut for seven weeks, made his own bed, and prepared his own food, corresponded with his ministers at home, and labored at the same time in shipbuilding. Induced by his love for the sea, to accept the invitation of William III. to visit London, he spent some weeks there, keenly observing and learning all that he could of trade, manufactures and the arts. Having proceeded to Vienna, he there received intelligence of a new rebellion of the Strelitz, on which he returned home, crushed the insurrection, and visited the rebels with fearful severity. In 1700 he entered upon a war with Sweden, which lasted till 1721. He was defeated by his great rival, Charles XII., at the battle of Narva, and the war went on with various results till 1709, when he completely defeated Charles at Pultawa. In the following year the Sultan declared war on him, and he narrowly escaped capture by the Turks in the campaign of 1711. This war ended in 1713. Not satisfied with his immense power as czar, Peter had suppressed the patriarchate, and made himself head of the Church as well as of the State. In 1703 he founded St. Petersburg, and began the fortifications of Cronstadt. Three years later he privately married Catherine, a girl of low origin and immoral character; married her publicly in 1710, and had her crowned in 1722. Peter extended the limits of the empire both in Europe and Asia; changed the face of Russia by his zealous promotion of trade, navigation, manufactures, and education; effected an immense change in the manners and customs of the Russians; and after the conclusion of peace with Sweden, received the title of Emperor of all the Russias, and Father of his Country. Reforming others, he failed to reform himself, but remained to the last an ignorant, coarse, brutal savage, indulging in the lowest vices, and gloating over scenes of cruel suffering. He would sometimes put his victims to the torture, play judge and executioner, too, and, drunk with wine, strike off 20 heads in succession, proud of his horrid dexterity. His state policy has been adhered to by his successors. Peter I. died in St. Petersburg, after very severe suffering, Jan. 28, 1725.

Peter III., Emperor of Russia; the son of Anne, eldest daughter of Peter the Great; born in 1728, and succeeded Elizabeth in 1761. He married the Princess Sophia Augusta of Anhalt, whose name he changed to Catherine, and, being inspired with grand and martial thoughts, attempted to govern his empire on the model of Frederick the Great; but, wanting capacity, energy, and courage, he signally failed in all his schemes. His empress, being apprised of his intention of divorcing her and bastardizing his son Paul, anticipated his design, and, exciting a revolution, entirely defeated his scheme, took him prisoner, and compelled him to sign a most humiliating abdication. After this, being sent to a fortress, he there perished, being murdered, it is understood, by Orloff, brother of Catherine's lover, in 1762.

Peter, Karl Ludwig, a German historian; born in Freyburg on the Unstrut, Germany, April 6, 1808. Among his works are: "Epochs in the History of the Roman Constitution"; "Studies in Roman History"; and "Criticism of the Sources of Ancient Roman History." He died in Jena, Aug. 11, 1893.

Peterhof, a palace of the emperor of Russia, on the S. shore of the Gulf of Finland, 18 miles W. of St. Petersburg, built by Peter the Great in 1711, contains a fine collection of paintings, and is surrounded by beautiful parks and gardens laid out on the model of those at Versailles, with cascades, terraces, and summer houses. Pop. 14,298.

Peter Martyr Anglerius, born in Arona, Spain, 1459; died in Granada, 1525. Was bishop of Jamaica, and wrote "The New World" in 1516, giving the first account of the discovery of America.

Peters, Samuel Andrew, an American author; born in Hebron, Conn., in 1735; was ordained a minister in the Church of England at Hartford in 1760. In 1774 he sailed to England to escape persecution on account of his toryism, and in 1781 published the satirical "General History of Connecticut," which gave rise to the misconception as to "Blue Laws," which were in the brain of Peters instead of having ever been on the statute books of Connecticut. He died in New York in 1826.

Petersburg, a city and port of entry of Dinwiddie co., Va.; on the S. bank of the Appomattox river. The so-called siege of Petersburg lasted from June 16, 1864, to April 2, 1865; and during its continuance 13 pitched battles were fought in the neighborhood. The intrenchments of Lee and Grant still form conspicuous features in the landscape. One of the best-known engagements was that of the old crater, to the E. of the city, on Griffith's farm, where a small museum of war relics is exhibited.

Peterson, Charles Jacobs, an American publisher; born in Philadelphia, in 1818; was the founder of "Peterson's Magazine," and the author of several popular novels. He died in Philadelphia, in 1887.

Peter's Pence, a voluntary contribution raised among Catholics, and sent to the Pope for his private use. Before the Reformation it was in England a legally collected tax. The name arose from its being collected on St. Peter's day.

Peter the Hermit, a French gentleman of Amiens, in Picardy, who renounced a military life to embrace that of a pilgrim. At the end of the 11th century, a general alarm was spread that the last day was approaching; on which numbers of persons flocked to the Holy Land from all countries with a view of ending their days near the holy sepulcher. Peter was of the number, and on his return to Europe made so pathetic a representation of the state of the Christians in Palestine to Pope Urban II., that he gave Peter leave to preach up the necessity of a crusade throughout Christendom. The appearance, zeal, and eloquence of the hermit, produced a prodigious effect, and all ranks and ages, of both sexes, pressed eagerly into the service. With a motley army, estimated at 100,000 men, Peter passed through Hungary. In his absence, his followers attacked Solyman's army at Nicea, and all, except a few thousands, perished, "and," says Gibbon, "a pyramid of bones informed their companions of the place of their defeat." Peter remained in Palestine, and was at the siege of Antioch in

1097; but on his attempting to make his escape, shortly afterward, was brought back, and compelled to take a new oath of fidelity and obedience to the holy cause. Two years later he was present at the siege of Jerusalem, where he displayed great bravery, and when the place was taken, was made vicar-general. Peter, on his return to France, founded the abbey of Neufmoustier, at Huy, in Liege, where he died in 1115.

Petit de Julleville, Louis, a French historian; born in Paris, July 18, 1841. His principal work is "History of the Theater in France." It is very full with regard to the old French theater. He gives in "The Theater in France" (1889) an account of the evolution of the French drama down to the present time. He also published a "History of the French Language and Literature."

Petition of Right, a declaration of the rights of the people put forward by the Parliament of England in the third year of the reign of Charles I., and assented to by him. They are: (1) That no man be compelled to pay any moneys to the state without common consent by act of Parliament. (2) That no person be imprisoned for refusing the same, nor any freeman be imprisoned without any cause showed, to which he might make answer. (3) That soldiers and mariners be not billeted in the houses of the people. (4) That commissions be no more issued for punishing by the summary process of martial law.

Petrarch, Francesco Petrarca, an Italian poet; born in Arezzo, Italy, in 1304. In 1341 Petrarch received the highest testimony of the renown which he had acquired as poet and scholar, by being crowned as laureate in the capitol of Rome. Petrarch was at Rome during the Jubilee of 1350; lived afterward at Vaucluse, Milan, Padua, Venice, and, in 1370, removed to Arqua, in the lovely Euganean Hills. Petrarch's works are partly in Italian and partly in Latin. The latter were those on which his reputation in his own day rested; but the former are those by which he is now most known. His Italian "Sonnets," "Canzoni," and "Triumphs," all sweet, exquisite, glowing variations on one theme "Laura" have placed him as one of the most celebrated of poets. He modelled the Italian sonnet, and gave to it, and to other forms of lyrical poetry, not only an admirable polish of diction and melody, but a delicacy of poetic feeling which has hardly ever been equaled. After long continued ill health, he died sitting among his books, July 18, 1374.

Petrel, a popular name for certain small oceanic birds of dusky plumage, nocturnal in habit, widely distributed but most abundant in the Southern

STORMY PETREL.

Hemisphere. They are considered by sailors as the harbingers of stormy weather, in which they seem to delight.

Petrel, The, a single screw, steel gunboat of the United States navy. The "Petrel" was in the engagement with the Spanish fleet at Manila, May 1, 1898.

Petri, Laurentius, a Swedish reformer; born in Orebro, Sweden, in 1499; studied under Luther at Wittenberg; was made Professor of Theology at Upsala, and in 1531 first Protestant Archbishop of Upsala. Along with his brother Olaus he was chiefly instrumental in converting Sweden to the Reformed doctrines, and with him superintended the translation of the Bible into Swedish (1541), a work that also helped to fix the language. He died in 1573. His brother Olaus,

born in Orebro in 1497, gained, a few years after his return (1519) from Wittenberg, the ear of Gustavus Vasa, who called him to the capital to preach the new doctrines, and eventually made him (1531) chancellor of the kingdom. This post he resigned in 1539, and spent the rest of his life as first pastor of Stockholm. He was a man of bold temperament, great activity, and powerful eloquence, and left several works, including memoirs, a mystery play, hymns, and controversial tracts. He died in Stockholm in 1552.

Petrifaction, the act or process of petrifying or changing into a stone; the state of being petrified; conversion of any organic matter, animal or vegetable, into stone, or a substance of stony hardness. A "petrifaction" is not, strictly speaking, a transformation of the original animal or plant into stone. It is merely a replacement of the organic tissue by mineral substance. As each particle of the plant or animal decays and disappears its place is taken, usually in water or mud, by a particle of mineral matter deposited from the water which has held it in suspension. Thus the perishable original is changed into imperishable stone, preserving its form and even its structural appearance when cut into.

Petrified City, Ishmonie, a ruined city of Upper Egypt. Its popular name arose from the fact that it contains a vast number of statues of human beings and animals in every possible posture, and which, according to a superstitious notion, were once living beings miraculously changed into stone.

Petroleum, earth oil, naphtha, mineral oil, paraffin oil. A term applied to a variety of inflammable liquids found naturally in many parts of the earth and formed by the gradual decomposition of vegetable matter beneath the surface. These liquids vary in color from a faint yellow to a brownish-black, and in consistence from a thin transparent oil to a fluid as thick as treacle, and their sp. gr. ranges from .7–1.1. They occur in abundance in parts of the United States and Canada. A light petroleum oil is used all over the world for illuminating purposes, and a heavy oil for lubricating machinery. The total production of crude petroleum in the United States for 1900 was the largest in its history, 63,362,704 barrels; valued at $75,752,691. Ohio, Texas, and Pennsylvania were the largest producers.

Petrology, the study of the mineralogical and chemical composition of rocks; including the various changes they have undergone through physical and chemical agencies, either combined or separate.

Pettenkofer, Max von, a German chemist; born near Neuburg, Dec. 3, 1818; studied in Munich, Wurzburg, and Giessen, and in 1847 became Professor of Chemistry at Munich. He made many valuable contributions to science on subjects as various as gold-refining, gas-making, ventilation, clothing, the influence of soils on health, epidemics, and hygiene generally. Of numerous separate works his "Handbook of Hygiene" is best known.

Petty, Sir William, an English political economist; born in Romsey, Hampshire, May 26, 1623; was educated partly at Caen, partly at the Universities of the Netherlands, and at Paris. In political economy he claims a place as one of the most important precursors of Adam Smith, on the strength of his "Treatise on Taxes and Contributions," and his "Political Arithmetic," the latter a discussion of the value of comparative statistics. He died in London, Dec. 16, 1687.

Petunia, a genus of American herbaceous plants, nearly allied to tobacco. They are much prized by horticulturists for the beauty of their flowers.

Pewter. The finer pewter is an alloy of 12 parts tin, one part antimony, and a small quantity of copper; the coarser, of 80 parts tin and 20 of lead. The same ingredients as the finer pewter, but in different proportions (nine of tin to one of antimony) constitute Britannia metal. Pewter is a name also for a polishing material used by marble workers and derived from the calcination of tin.

Peyton, Jesse Enlaws, an American patriot; born in Mayesville, Ky., Nov. 10, 1815. He assisted in the liquidation of Henry Clay's debts;

was a founder of the Constitutional Union Party in 1860; was sent by President Lincoln on a mission to Kentucky to dissuade that State from seceding; and during the Civil War organized at his own expense three regiments for the Union army. He was instrumental in promoting the centennial celebration of Independence Day, Bunker Hill Day, Yorktown (Va.) Day, and of the inauguration of American constitutional government, and at the time of his death was organizing an international celebration of the birth of Christ to be held in Jerusalem in 1900. He died in Haddonfield, N. J., April 28, 1897. He was popularly known as "the father of celebrations."

Peyton, John Lewis, an American lawyer and author; born in Staunton, Va., Sept. 15, 1824; studied law at the University of Virginia, and subsequently practised in Chicago; in 1861 went to Europe as agent of the Confederacy, and remained abroad till 1880. He published "The American Crisis," etc. He died in 1896.

Pfennig, or **Pfenning,** a small copper coin of various values, current in Germany and the neighboring States. The pfennig of the German empire is the hundredth part of the mark.

Pfleiderer, Otto, a German theologian; born in Stettin, Wurtemberg, Sept. 1, 1839. In 1875 he was called to be Professor of Systematic Theology at Berlin. He made his name as well known in America as in Germany by a series of works which no serious student of philosophy or theology can afford to overlook. Of these the chief are "Religion, its Essence and History"; "Outline of Christian Faith and Ethics"; "The Philosophy and Development of Religion"; etc.

His brother, Edmund Pfleiderer, born in Stettin Oct. 12, 1842, studied at Tubingen, and after a short experience as a pastor was made Professor of Philosophy at Kiel in 1873, whence he was called to Tubingen in 1878. His writings include studies on Leibnitz, on Empiricism and Scepticism in Hume's Philosophy, modern Pessimism, etc.

Phaeton, in Greek mythology, according to Ovid, a son of the sun, or Phœbus. He asked and obtained from his father permission one day to drive the chariot of the sun, but being unable to control the horses, Jupiter struck him with a thunderbolt, and hurled him headlong from heaven into the river Po. Also an open carriage like a chaise, on four wheels, and drawn by two horses.

Phalanger, small woolly-coated marsupials, with opposable great toes, which are destitute of a nail. They are, for the most part, vegetable feeders,

PHALANGER.

though some are insectivorous, and in confinement any of them will readily devour small birds or other animals.

Phalanx, in Greek antiquities, the close order of battle in which the heavy-armed troops of a Grecian army were usually drawn up.

Phantasmagoria, an optical effect produced by a magic lantern. The glass is painted black on all parts except that occupied by the figures, which are painted in transparent colors. The image is thrown on a transparent screen placed between the spectators and the lantern. By moving the instrument toward or from the screen, the figures are made to diminish or increase in size, which is capable of producing startling effects. Also, the apparatus by which such effect is produced.

Pharaoh, the name borne in the Bible by 10 kings of Egypt; the best known of which are, the monarch to whom Joseph explained his dream, and who loaded him with honors; he who commenced the persecution of the Hebrews, and who put to death all

the male children; and he who was summoned by Moses to the departure of the Hebrew people, and who was afterward drowned, with all his host, in the waters of the Red Sea.

Pharisees, the most numerous of the three divisions or orders of Judaism in the time of Christ, the other two being the Essenes and the Sadducees. They were so called because they kept aloof from Levitically impure food, separated themselves from the lawless people of the land, and united to keep the Mosaic law. They arose after the return from the Babylonish captivity and represented the national faith of orthodox Judaism.

Pharmacopœia, a book containing the prescriptions for the preparation of medicines recognized by the general body of practitioners.

Pharmacy, or **Pharmaceutics,** the art of preparing, compounding, and combining substances for medical purposes; the art of the apothecary. As these substances may be mineral, vegetable, or animal, theoretical pharmacy requires a knowledge of botany, zoölogy, and mineralogy; and as it is necessary to determine their properties, and the laws of their composition and decomposition, of chemistry also. In a narrow sense pharmacy is merely the art of compounding and mixing drugs according to the prescription of the physician.

PHEASANT.

Pheasant, one of the most highly prized game birds. The adult male pheasant is a beautiful bird, about three feet long. Head and neck deep steel-blue, shot with greenish-purple and brown; eye surrounded by a patch of scarlet skin, speckled with blue-black; ear-coverts brown; back a light golden-red, the feathers of the upper part tipped with velvet-black, of the lower part marked with brown. Quill feathers brown, of various shades, tail feathers oaken-brown, barred with a darker shade and with black. Breast and front of the abdomen golden-red with purple reflections, feathers edged with black; rest of abdomen and under tail-coverts blackish-brown. The female has yellowish-brown plumage, and is about two feet in length. Such is the common pheasant. There are several other species.

Phelps, Austin, an American clergyman and author; born in West Brookfield, Mass., Jan. 7, 1820. He was pastor of the Pine Street Congregational Church, Boston, in 1842–1848; and Professor of Sacred Rhetoric in Andover Theological Seminary, in 1848–1879. He was noted as an original writer and an eloquent preacher. He died in Bar Harbor, Me., Oct. 13, 1890.

Phelps, Edward John, an American diplomatist; born in Middlebury, Vt., July 11, 1822; was graduated at Middlebury College in 1840; studied at the Yale Law School; was admitted to the bar in 1843; and settled in Burlington in 1845. In 1851 he was appointed Comptroller of the Treasury and remained in the office through Fillmore's administration. In 1881–1885 he was Professor of Law in the Yale Law School and also lecturer on constitutional law in Boston University. He was minister to England in 1885–1889. During the Bering Sea dispute he was senior counsel for the United States. He died in New Haven, Conn., March 9, 1900.

Phi Beta Kappa, the oldest of the American college Greek-letter societies. It takes its name from the initial letters of its motto, said to be Philosophia Biou Kubernetes, "Philosophy is the guide of life." It was founded in 1776 in the old "Raleigh Tavern" at Williamsburgh, Va., by 44 undergraduates of William and Mary College, of whom John Marshall was one. Branches were established at Yale in 1780 and at Harvard in 1781; and today there are nearly a score in the

principal colleges and universities of the Union. The Phi Beta Kappa is now simply "an agreeable bond of meeting among graduates"; since 1831 its innocent mysteries have been open secrets.

Phidias, the great Greek sculptor; born in Athens, probably between 490–480 B. C. He was one of the most intimate friends of Pericles, under whose rule he was appointed director of all the great temples and monuments which were to be erected in the city. Of these the most important were the Parthenon, or temple of Athena, on the Acropolis, and the Propylæa. He executed a colossal statue of the goddess for the interior of the temple with his own hand. The well-known Elgin Marbles of the British Museum were the sculptured decorations of that unrivaled temple. Phidias spent some years at Olympia, and there he executed the most magnificent of all his works — the statue of the Olympian Zeus. The prevailing characteristic of the works of Phidias appears to have been an ideal sublimity of form which has never since been equaled. According to the generally received account, he was thrown into prison, and died there 432 B. C.

Philadelphia, a city coextensive with Philadelphia co., Pa.; on the Delaware and Schuylkill rivers, 85 miles S. W. of New York. It is the largest city of Pennsylvania and the third largest in the United States; area, 132 square miles; pop. (1890) 1,046,964; (1900) 1,293,697.

The city is built chiefly on a low peninsula between the two rivers. It extends N. and S. about 22 miles, and is from 5 to 10 miles in width. There is a water frontage on the Delaware river of over 16 miles, of which more than 5 miles have docks. The harbor has been greatly improved by the removal of the islands in the middle of the river, and in front of the wharves there is an average depth of 50 feet.

Among the attractions of the city is Fairmount park, one of the largest public parks in the world. It extends more than 7 miles on both banks of the Schuylkill river, and more than 6 miles on both banks of Wissahickon creek, giving it an area of over 3,000 acres, traversed by 32½ miles of driveways. In 1876 the Centennial Exposition was held here. Memorial Hall, erected at a cost of $1,500,000, which was used for the art gallery of the Exposition, now contains a permanent industrial and art collection. Here also is the Horticultural Building filled with tropical and other plants and surrounded by 35 acres of ground devoted to horticulture.

In the heart of the city, at the intersection of Market and Broad streets, stands the City Hall, on a piece of ground which was formerly Penn Square. This great structure, usually called the Public Building, is said to be the largest building in the United States. It is built of white marble and granite; is 486½ feet long by 470 wide; contains 520 rooms, and including a court yard 200 feet square in the center, covers an area of nearly 4½ acres. The central tower rises to a height of 547 feet, 3 inches, and is surrounded by a colossal statue of William Penn, 37 feet in height. The total cost of the building was over $20,000,000.

In its manufacturing products Philadelphia ranks next to New York. There are upward of 20,000 manufacturing establishments, with a combined capital of about $400,000,000, and nearly 300,000 employes. The combined output amounts to more than $600,000,000. The chief products are locomotives, sugar and molasses, men's clothing, foundry and machine shop products, carpets and rugs, hosiery and knit goods, woolen and cotton goods, malt liquors, morocco, chemicals, packed meat, refined petroleum, silk, and silk goods. The great Cramp shipbuilding yards are on the Delaware, just W. of the heart of the city.

According to recent educational statistics, the children of school age aggregated 250,630; the enrollment in the public day schools was 179,156, and in the private and parochial schools (estimated) 78,210. There were 3,317 teachers; 325 buildings used for school purposes; and public school property valued at $12,087,516. The institutions for higher education include the William Penn Charter School, founded in 1689; the University of Pennsylvania, and many others.

In September, 1681, a small party of settlers, sent out by William Penn,

arrived at the site of the present city, and in the following summer the place was laid out and named Philadelphia, the "city of brotherly love." The city was active in resisting British aggression in 1763–1764. On Sept. 5, 1774, the 1st Continental Congress met here, and on May 10, 1775, the 2d. Col. George Washington was appointed General and Commander-in-Chief of the American army in the State House on June 15, 1775. Here also the Declaration of Independence was adopted, July 4, and proclaimed July 8, 1776. The city was occupied by the British from September, 1777, to June, 1778. In the summer of 1787 delegates from the various States met in the State House, and framed the Constitution. The great Centennial Exposition was held here in 1876.

Philadelphia, The, a steel, twin-screw protected cruiser of the United States navy.

Philæ, an island in the Nile, near Assuan and S. of Syene, in Nubia, largely submerged by the great Assuan dam. It is a small granite rock, fringed with rich verdure, about 1,200 feet long and 450 broad, almost covered with ancient buildings of great architectural beauty and interest, though not of very ancient date.

Philemon, a member of the Colossian church. The Epistle of Paul to Philemon: An epistle of Paul, in conjunction with Timothy, to Philemon, whose runaway slave, Onesimus, had come to Rome, and been converted by the apostles, while the latter was a prisoner, and advanced in years. Its genuineness is generally admitted.

Philip, one of the 12 apostles, according to John's Gospel, "of Bethsaida, the city of Andrew and Peter," and who was called to follow Jesus at Bethany. After the resurrection he was present at the election of Matthias to the apostleship, but is not again mentioned. Philip the Evangelist, often confounded with the above, is first mentioned in Acts vi: 5. He preached at Smyrna, where Simon Magus was one of his converts; baptized the Ethiopian eunuch; and entertained Paul and his companion on their way to Jerusalem.

Philip II. of Macedonia, father of Alexander the Great, and son of Amynthas II.; born 359 B. C. He began to reign after the death of his brother, Perdiccas III., in 359. With great ability, energy, and success, he first secured the internal peace and order of his kingdom, improved the discipline of his army, and created the famous phalanx, which contributed to so many Macedonian victories. He cherished vast schemes of conquest; aspired first to make himself master of all the states of Greece, and then to invade and conquer Persia. The former was accomplished after a severe and protracted struggle culminating in the victory of Chæronea, over the allied Athenians and Thebans, 338. He soon after assembled a congress at Corinth, and was named general of the Confederate Greeks in the war to be undertaken against Persia. But in 336 he was assassinated at Ægea, and that war was reserved for his son.

Philip II. of France, surnamed Augustus, son of Louis VII. and of Alix, daughter of Thibault, Count of Champagne; born in 1165, succeeded his father, 1180, accompanied Richard Cœur de Lion to the Holy Land, 1190, invaded Normandy during Richard's captivity, 1193, confiscated the possessions of King John of France, after the supposed murder of Arthur, 1203, prepared to invade England at the instance of the Pope, 1213, turned his arms against Flanders, and gained the celebrated battle of Bouvines, 1214, and died in 1223. Philip Augustus was one of the ablest princes that ever reigned in France, both as a commander and an administrator.

Philip III., called the Hardy, the son of Louis IX. and Margaret of Provence. He was born in 1245, and succeeded his father in 1270. The invasion of Sicily by Peter of Aragon, and the massacre of the French, known as the "Sicilian Vespers," caused him to make war against that prince, in the course of which he died in 1285.

Philip II. of Spain, son of the emperor Charles V. and Elizabeth of Portugal; born in Valladolid, in 1527. He married, in 1543, his cousin Mary of Portugal, who became the mother of Don Carlos, and died in 1545. In 1554 he received from his father the kingdom of Naples, and the same year, after troublesome negotiations, mar-

ried Mary, Queen of England. He was disliked in England, and soon departed. His father gave up to him the Netherlands in October, 1555, and the kingdom of Spain early in the following year. He declared war on France, and induced Queen Mary to join him; won, by his troops under the Duke of Savoy, the memorable victory of St. Quentin over the French, in 1557, and was present in person at the capture of the town, which followed. He vowed never to witness another battle, and he never did. He vowed also to show his gratitude for his success by building a monastery, which he more than fulfilled in the magnificent Escurial. A second victory over the French at Gravelines, in 1558, was followed by the peace of Cateau-Cambresis. Immediately on his return to Spain, he began a terrible persecution of "heretics," and was the pitiless spectator at an auto-da-fe at which 40 persons perished at the stake.

The most momentous event of his reign was the revolt of the Netherlands, first excited by his edict against heretics, and his attempt to establish the Inquisition there in 1565, and resulting, after long years of war and desolation, in the establishment of the Dutch Republic. In 1565, he persecuted the Christian Moors of Granada, and provoked a revolt, which began in 1569; and after the greatest atrocities on both sides, ended by the flight or submission of the Moors in 1571. On the death of Henry, King of Portugal, in 1580, Philip conquered that country and annexed it to Spain. He made immense preparations for an invasion of England; and in 1588, the year after Drake's attack on Cadiz, his great fleet, which he named "the Invincible Armada," sailed from Lisbon; but a great storm and contrary winds damaged and threw it into disorder, and it was defeated by the English. Philip carried on intrigues in France against Henry II. and Henry IV.; but his aim was defeated by the conversion of the latter to the Roman faith. He lived to see the failure of his designs on the Netherlands, on France, and on England. It was Philip II. who removed the seat of government from Toledo, and made Madrid the capital of Spain. He died at the Escurial, after severe suffering, the fruit of his debaucheries, Sept. 13, 1598.

Philip, sachem of the Wampanoag tribe of Indians, was the second son of Massasoit, who for nearly 40 years had been the first and stanchest ally of the Pilgrim settlers of Plymouth, and had obtained English names for his two sons. In 1661 Philip succeeded his brother, and formally renewed the treaties of his father, which he kept for some years. By 1671, however, goaded by the encroachments of the whites he had formed a confederation of tribes aggregating nearly 10,000 warriors; and in 1675 what is known as King Philip's War broke out. Aug. 12, 1676, at midnight, Philip and his followers were surprised by Capt. Benjamin Church. Philip was slain and his head cut off. Afterward his body was drawn and quartered, and the head was exposed on a gibbet at Plymouth.

Philip, John Woodward, an American naval officer; born in New York city, Aug. 26, 1840. He entered the naval academy in 1856, was made midshipman in 1861, and served during the Civil War on the "Chippewa," the monitor "Montauk" and other vessels. He was commissioned captain in 1899, and was the inspector of the "New York" during construction. During the war with Spain he commanded the battleship "Texas," which took an active part in the capture of the Spanish fleet under Cervera, at Santiago de Cuba, July 3, 1898. He was touched by the sight of the perishing Spaniards and asked his men not to cheer. He was promoted to rear-admiral and died in Brooklyn, N. Y., June 30, 1900.

Philippi, a city of Macedonia; named after Philip II. of Macedon, who enlarged it because of the gold mines in its neighborhood. It is famous on account of the two battles fought in 42 B. C. between Antony and Octavianus on the one side and the republicans under Brutus and Cassius on the other, in the second of which the republic finally perished. The apostle Paul founded a Christian church here, to which one of his epistles is addressed.

Philippian, of or pertaining to Philippi or its inhabitants; also a na-

tive or inhabitant of Philippi. The Epistle of Paul the apostle to the Philippians, an epistle addressed by St. Paul, in conjunction with Timothy, "to all the saints in Christ Jesus which are at Philippi, with the bishop and deacons."

Philippine Islands, an archipelago in the Pacific Ocean; extending almost due N. and S. from Formosa to Borneo and the Moluccas, comprising more than 1,200 islands, of which the two largest are Luzon and Mindanao; area, about 52,650 square miles; population 6,709,810. The archipelago was ceded by Spain to the United States as a result of the war of 1898, the United States government making a payment of $20,000,000 to Spain, and subsequently $100,000 for the cession of the islands of Cagayan and Cibitue, which were omitted in the treaty of peace.

The following, taken from the official report by Maj. Gen. Francis V. Greene, U. S. V., sets forth the conditions and interests of the islands at the time of the American occupation:

These islands, including the Ladrones, Carolines, and Palaos, which are all under the government of Manila, are variously estimated at from 1,200 to 1,800 in number. The greater portion are small and are of no value. The important islands are less than a dozen in number.

The total population is somewhere between 7,000,000 and 9,000,000. This includes the wild tribes of the mountains of Luzon and of the islands in the extreme South.

In 1899 a census was taken by the United States authorities, chiefly for educational purposes, which showed a total of 6,709,810. The "Official Guide" gives a list of more than 30 different races, each speaking a different dialect, but five-sixths of the Christian population are either Tagalos or Visayas. The races are mostly of the Malay type. Around Manila there has been some mixture of Chinese and Spanish blood with that of the natives, resulting in the Mestizos, or half-breeds, but the number of these is not very great. As seen in the provinces of Cavite and Manila, the natives (Tagalos) are of small stature, averaging probably 5 feet 4 inches in height and 120 pounds in weight for the women. Their skin is coppery brown, somewhat darker than that of a mulatto. They seem to be industrious and hard-working, though less so than the Chinese. The bulk of the population is engaged in agriculture.

The climate is one of the best known in the tropics. The thermometer during July and August rarely went below 79° or above 85°. The extreme ranges in a year are said to be 61° and 97°. There are three well-marked seasons — temperate and dry from November to February, hot and dry from March to May, and temperate and wet from June to October. The total rainfall has been as high as 114 inches in one year. Yellow fever appears to be unknown. The diseases most fatal among the natives are cholera and smallpox, both of which are brought from China.

It is now generally known that the Philippines have such minerals as iron, gold, silver, copper, lead, granite, petroleum, limestone, and quartz, and that it is only a matter of time when these minerals will be mined and put into the commercial markets of the world.

Gold is reported on Luzon, coal and petroleum on Cebu and Iloilo and sulphur on Leyte. The imports of coal in 1894 (the latest year for which statistics have been printed) were 91,511 tons, and it came principally from Australia and Japan. In the same year the imports of iron of all kinds were 9,632 tons. If the Cebu coal proves to be of good quality, there is a large market for it in competition with coal from Japan and Australia.

Though agriculture is the chief occupation of the Philippines, yet only one-ninth of the surface is under cultivation. The soil is very fertile, and even after deducting the mountainous areas it is probable that the area of cultivation can be very largely extended and that the islands can support a population equal to that of Japan (42,000,000). Lack of irrigation prevents the development of extensive tracts that could by a little enterprise be made very productive. The chief products are rice, corn, hemp, sugar, tobacco, cocoanuts, and cacao. Coffee and cotton were formerly produced in large quantities —

the former for export and the latter for home consumption; but the coffee plant has been almost exterminated by insects, and the home-made cotton cloths have been driven out by the competition of those imported from England. The rice and corn are principally produced in Luzon and Mindoro and are consumed in the islands. The rice crop is about 765,000 tons. It is insufficient for the demand and 45,000 tons of rice were imported in 1894; also 8,669 tons (say 60,000 barrels) of flour, of which more than two-thirds came from China and less than one-third from the United States. The cacao raised in the S. islands amounts only to 150 tons, and is all made into chocolate and consumed in the islands.

The sugar cane is raised in the Visayas. The crop yielded in 1894 about 235,000 tons of raw sugar, of which one-tenth was consumed in the islands, and the balance, or 210,000 tons, valued at $11,000,000, was exported, the greater part to China, Great Britain, and Australia. The hemp is produced in S. Luzon, Mindoro, the Visayas, and Mindanao. It is nearly all exported in bales. In 1894 the amount was 96,000 tons, valued at $12,000,000. Tobacco is raised in all the islands, but the best quality and greatest amount in Luzon. A large amount is consumed in the islands, smoking being universal among women as well as the men, but the best quality is exported. The amount in 1894 was 7,000 tons of leaf tobacco, valued at $1,750,000. Spain took 80 per cent. and Egypt 10 per cent. of the leaf tobacco. Of the manufactured tobacco 70 per cent. goes to China and Singapore, 10 per cent to England, and 5 per cent. to Spain.

Cattle, goats, and sheep have been introduced from Spain, but they are not numerous. Domestic pigs and chickens are seen everywhere in the farming districts. The principal beast of burden is the carabao, or water buffalo, which is used for plowing rice fields as well as drawing heavy loads on sledges or on carts. Large horses are almost unknown, but there are great numbers of native ponies from 9 to 12 hands high, possessing strength and endurance far beyond their size.

With the construction of railways in the interior of Luzon an enormous extension could be given to commerce, nearly all of which would come to the United States. Manila cigars of the best quality are unknown in America. They are but little inferior to the best of Cuba and cost only one-third as much. The coffee industry can be revived and the sugar industry extended, mainly for consumption in the far East. The mineral resources can be explored with American energy, and there is every reason to believe that when this is done the deposits of coal, iron, gold, and lead will be found very valuable. On the other hand, we ought to be able to secure the greater part of the trade which now goes to Spain in textile fabrics, and a considerable portion of that with England in the same goods and in iron.

On Jan. 17, 1899, President McKinley appointed a commission consisting of Jacob G. Schurman, Admiral George Dewey, Maj.-Gen. Elwell S. Otis, Col. Charles Denby, and Dean S. Worcester, to report on the affairs of the Philippine islands. The report of this commission was sent to Congress in February, 1900. It stated the impossibility of withdrawing the protection and government of the United States from the islands; and recommended the establishment of public schools; and, as far as possible, a civil government to replace the military. It also assured Congress of the willingness of the representative body of the population to accept the protection, guidance, and authority of the United States. On April 17, 1900, President McKinley appointed a second commission, comprising William H. Taft, Dean S. Worcester, Luke E. Wright, Henry C. Ide, and Bernard Moses; and in a message to the Secretary of War defined the duties of the new commission.

On Jan. 31, 1901, the second (known as the Taft) commission enacted into law a code of civil government for the islands. It established a fair system of taxes, laid the basis for a primary school system, innovated a more exact method for collecting revenues, and created certain civil and judicial officers. On July 4, 1901, civil government was inaugurated in the Philippines. Judge Taft had been appointed civil governor; Gen. Adna R. Chaffee military governor; and the other four

members of the commission made heads of the various civil departments.

On Dec. 18, 1901, the Taft Commission submitted its annual report. It stated that the insurrection was confined to five provinces, and that the bulk of the population was law abiding.

The commission outlined a project which in brief contemplated the continuance for two years of the existing powers of the commission. Then it advocated a representative government to be formed composed of a civil governor, a legislative council, and a popular assembly, the powers of the latter being closely limited so as to prevent it from choking the government in making the budget during fits of passion or through inexperience. The President of the United States would, of course, reserve absolute veto power. The Filipinos should also have the right to be represented before Congress and the executive government at Washington by two delegates. A full account was given by the commission of the organization of the system of education which had been going on vigorously under Dr. F. W. Atkinson, the general superintendent. The English language was the basis of all public instruction, and nearly one thousand trained teachers from the United States already had been put to work in the towns and cities of the pacified provinces. On July 3, 1902, the President proclaimed amnesty to all political prisoners in the Philippines, and on July 6, Aguinaldo was given his liberty.

By 1902 the United States had established supreme and lower courts; raised the police force to 6,000 men; enrolled 150,000 children in public schools with 1,000 American and 4,000 native teachers; spent millions on improving roads and harbors; and had nearly $7,000,000 in the island treasury to meet outlays.

Although civil government is in full operation, serious outrages were committed by robber bands, even in the vicinity of Manila in 1903, and it was reported that plans were being laid for another insurrection.

Philipson, David, an American rabbi; born in Wabash, Ind., Aug. 9, 1862; was graduated at the University of Cincinnati and at the Hebrew Union College there in 1883, and became Professor of Homiletics in the Hebrew Union College, and president of the Hebrew Sabbath School Union of America. He is author of "The Jew in English Fiction," "Old European Jewries," "The Oldest Jewish Congregation in the West," etc.

Philistines, an ancient people, descended from Ham, the son of Noah. They emigrated at a very early date from Egypt into Syria, called after them Philistia, and afterward Palestine, though they possessed only the portion on the S. coast bounded by the hilly countries of Ephraim and Judah, and extending S. W. to the confines of Egypt. Their chief city, Gaza, is mentioned as early as 2218 B. C. They had numerous struggles with the Israelites with various successes, the several accounts of which form a portion of Old Testament history. Pompey incorporated Philistia in the Roman province of Syria, 62 B. C.

Phillips, Adelaide, an American singer; born in Stratford-on-Avon, England, in 1833. When seven years old she was taken to Boston, Mass., which was her residence the remainder of her life. Her voice was a fine contralto. She made her debut Sept. 25, 1843, at the Boston Museum, as Little Pickle. In 1850, on the advice of Jenny Lind, she went to Paris and opera in Milan in 1854, and in 1856 in New York, in "Il Trovatore." She studied with Garcia. She sang in appeared later in Paris in the same role. Subsequently she sang in all the principal cities of the world. Her last appearance was in 1881. She died in Carlsbad, Oct. 2, 1882. Her sister Mathilde was also a contralto singer.

Phillips, George Searle, pseudonym January Searle, an English-American literateur; born in England, in 1818. He was a well-known writer and lecturer of Yorkshire, England, who removed to this country and became prominent in literary circles. He

Phillips, Henry, an American writer and lawyer; born in Pennsylvania, in 1838. He wrote: "History of American Colonial Paper Currency"; "History of American Continental Paper Money," etc. Died in 1895.

Phillips, Wendell, an American orator and abolitionist; born in Bos-

ton, Mass., Nov. 29, 1811. He was graduated at Harvard in 1831, studied law there, and was called to the bar in 1834. But before clients came he had been drawn away from his profession to the real work of his life. A timely speech in Faneuil Hall in 1837 made him at once the principal orator of the anti-slavery party; and henceforth, till the President's proclamation of Jan. 1, 1863, he was Garrison's loyal and valued ally, his lectures and addresses doing more for their cause than can well be estimated. He also championed the cause of temperance, and that of women, and advocated the rights of the Indians. In 1870 he was nominated governor by the Prohibitionists and the Labor Party. His speeches and letters were collected in 1863 (new ed. 1884). He died in Boston, Mass., Feb. 2, 1884.

Philology, in a popular sense: (1) Etymology, or the science of the origin of words. (2) Grammar, or the science of the construction of language in general and of individual languages. (3) Literary criticism, or the investigation of merits and demerits in style and diction.

Philopoemen, called the last of the Greeks, really their last great commander. He was born in Arcadia, 253 B. C., became in 210, generalissimo of the Achaian League, and conquered the Spartans — at which time he abolished the laws of Lycurgus. The greatest of his victories in this long struggle was the battle of Mantinea. He was put to death by poison when a prisoner of the Messenians, 183 B. C., the same year that proved fatal to Hannibal and Scipio.

Philosopher's Stone, an imaginary stone sought for by the alchemists, which should transmute everything it touched into gold.

Philosophy, a term said by Diogenes Laertius to have been suggested by Pythagoras, who, on being complimented on his wisdom, said that he was not wise but a lover of wisdom (philos sophia), the Deity, alone being wise. Philosophy, while earnest in amassing knowledge, aimed chiefly at penetrating to the principles of things. Popularly, it is divided into natural and mental philosophy, the former investigating the physical laws of nature, the latter those regulating the human mind. The term philosophy is now generally restricted to the second of these.

Phips, or **Phipps, Sir William,** governor of Massachusetts; born in Pemmaquid (Bristol), Me., Feb. 2, 1651. He was successively a shepherd, a carpenter, and a trader, and in 1687 recovered from a wrecked Spanish ship off the Bahamas bullion plate, and treasure valued at $1,500,000; this gained him a knighthood and the appointment of sheriff of New England. In 1690 he captured Port Royal (now Annapolis) in Nova Scotia, but failed in the following year in a naval attack on Quebec. In 1692, through the influence of Increase Mather, he was appointed governor of Massachusetts. He tolerated the witch delusion and its accompanying tragedies until his own wife was menaced by the witch hunters. He died Feb. 18, 1694, in London, England, whither he had been summoned to answer certain charges of arbitrary conduct.

Phlebotomy, or **Venesection,** the act of letting blood by opening a vein; a method of treatment formerly applied to almost all diseases, but now chiefly confined to cases of general or local plethora. Another mode of letting blood is by cupping or by the application of leeches. It has been one of the processes of the medical profession from the earliest times.

Phœbus ("the Bright"), an epithet, and subsequently a name, of Apollo. It had reference both to the youthful beauty of the god and to the radiance of the sun, when, latterly, Apollo became identified with Helios, the sun god.

Phœnicia, in ancient geography, in the largest sense, a narrow strip of country extending nearly the whole length of the E. coast of the Mediterranean Sea, from Antioch to the borders of Egypt. But Phœnicia proper was included between the cities of Laodicea, in Syria, and Tyre, comprehending mainly the territories of Tyre and Sidon, and forming then only a part of the country of Canaan. Some authorities state that Agenor was the first king of Phœnicia, 1497 B. C.; but all agree that the country itself was the seat of a great nation, and renowned for its naval enterprise at a

much earlier period. A colony of Phœnicians, led by Elissa or Dido, settled in Africa 878 B. C., and founded Carthage.

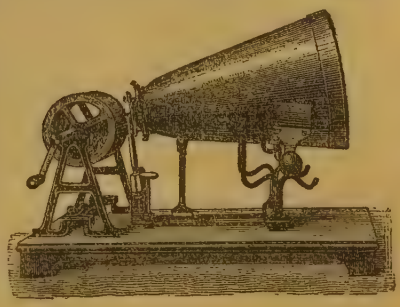
Phœnix, or **Phenix,** in astronomy, one of the constellations of the Southern Hemisphere, N. of the bright star Achernar in Eridanus.

Phonetic, or **Phonetical,** representing sound; pertaining to the representation of sounds; a term applied to aphabetic or literal characters which represent sounds, as a, b, c; as opposed to ideographic, which represent objects or symbolize abstract ideas, as in Egyptian hieroglyphics. Phonetic spelling, a system of spelling in which the words are spelled exactly as they are pronounced, the sounds being represented by characters each of which represents a single sound. Phonetic printing was first suggested by Isaac Pitman, of Bath, England, and reduced to a system by him in conjunction with A. J. Ellis, in the years 1843–1846. Since that time many schemes of phonetic spelling have been proposed and several are now in daily use by stenographers in the United States.

Phonograph, a character used in phonography; a type or character used for expressing a sound. Also an instrument for recording and reproducing sounds, invented by Thomas A. Edison.

PHONOGRAPHIC RECORD.

Phonography, a description of the sounds uttered by the organs of speech. Also the representation of sounds by certain characters, each of which represents one sound, and always the same sound. Its special application is to alphabetical writing, in which sounds or articulations are represented by signs or letters, as opposed to the system in which the representation is by ideas, symbols, or cipher.



EDISON PHONOGRAPH.

Phosphate, in chemistry, the generic term for the salts formed by the union of phosphoric anhydride with bases or water or both. They hold a leading part in the chemistry of animal and plant life, the most important in this connection being the phosphate of soda, phosphate of lime, and the basic phosphate of magnesia. In agriculture the adequate supply of phosphates to plants in the form of manures becomes a matter of necessity in all deplenished soils.

Phosphorescence, the property which many substances and organic beings possess of emitting light under certain conditions; also a phosphoric light. The phosphorescence of tropical, and to a large extent also of temperate seas is attributed to a small infusorial animalcule, aided by Medusæ, Tunicata, Annelids, etc. On land, of insects, some milipedes, the female glow-worm, and the fireflies, emit light. In the glow-worm the light is from the under side of the final segments of the abdomen. The phosphorescence of fish in a cupboard is well known; also of decaying animals in marshes.

Phosphoric Acid, a tribasic acid formed by the action of nitric acid upon phosphorus, or by the hydration of phosphoric anhydride. It is very deliquescent, has an intensely sour taste, and reddens litmus paper. It is not poisonous.

Phosphorus, a non-metallic pentad element; found in a state of combina-

tion in the unstratified rocks, the soil, the organism of plants, and the bodies of animals. Discovered by Brandt in 1669. Used on a very large scale in the preparation of safety matches.

Photoengraving, a term applied to producing printing blocks or plates by photography.

Photogravure, a term applied to methods of producing, by photography, plates for printing in a copperplate press.

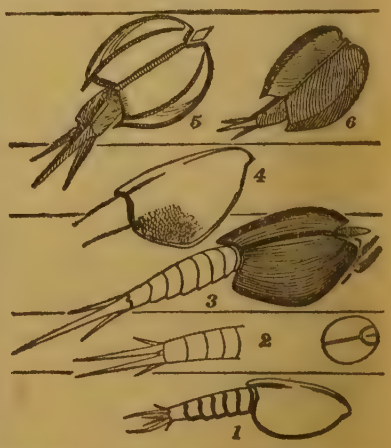
Photoheliograph, an instrument for photographing the sun.

Photolithography, a mode of producing by photographic means designs upon stones, from which impressions may be obtained in the ordinary lithographic press.

Phrenology, the science or doctrine which teaches that a relation exists between the several faculties of the human mind and particular portions of the brain, the latter being the organs through which the former act. That the brain, taken as a whole, is the part of the human body through which the mind operates, had been from ancient times the general belief; but the localization of the several faculties was first attempted by Dr. Franz Joseph Gall, who gained, in 1804, a valuable coadjutor in Dr. Spurzheim. When Spurzheim visited Edinburgh, he met Mr. George Combe, who adopted his views, and in 1819 published "Essays on Phrenology," ultimately developed into his "System of Phrenology," which became very popular. Gall enumerated nearly 30, Spurzheim 35, mental faculties which he considered as primitive. These Spurzheim divides into moral, or affective, and intellectual. The affective faculties are subdivided into propensities producing desires or inclination, and sentiments, which along with this excite some higher emotion. The intellectual faculties are similarly divided into perceptive and reflective. They are then localized on the brain, or rather on the skull.

Phrygia, in ancient geography, an inland province of Asia Minor. It was called Phrygia Pacatiana, and also Phrygia Major, in distinction from Phrygia Minor, which was a small district of Mysia near the Hellespont, occupied by some Phrygians after the Trojan war. This region was a high table-land, fruitful in corn and wine, and celebrated for its fine breed of cattle and of sheep.

Phylactery, a charm, spell, or amulet worn as a preservative against disease or danger. In Judaism, small square boxes, made either of parchment or black calfskin, in which are inclosed slips of vellum inscribed with passages from the Pentateuch and which are worn to this day on the head and on the left arm by every orthodox Jew on week days during the daily morning prayer.

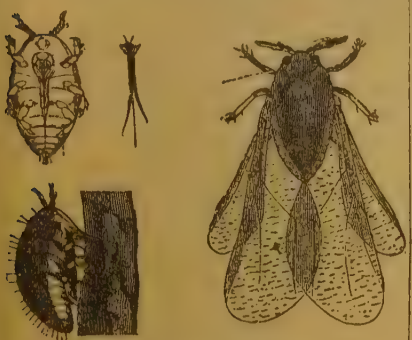


RECENT AND FOSSIL PHYLLOCARIDA.
1, Hymenocaris; 2, Peltocaris; 3, Ceratiocaris; 4, Dictyocaris; 5, Dithyrocaris; 6, Argus.

Phyllocarida, in zoölogy, and palæontology; an order of Crustacea, represented by Nebalia and a number of fossil forms. The group is intermediate between the Phyllopoda and shrimps (Decapoda). The living type is Nebalia bines; it ranges from Maine to Greenland and Norway, and it is only about half an inch long, while some of the fossil forms were about one foot in length.

Phylloxera, in entomology, a genus of insects allied to the Aphis and Coccus families. The Phylloxeridæ attach themselves to various plants, on the juice of which they feed, and

which they often injure or destroy. P. vastatrix is the name given to an insect of this family, which, since 1865, has committed great devastation in the vineyards of France. Great numbers of this insect appear on the roots of the vine, where they produce galls, and their punctures are so nu-



PHYLLOXERA INSECT.

merous and incessant that the roots can no longer supply nutriment to the plant, which fades and dies. There is a form which lives on the leaves, also producing galls.

Physician, one who is skilled in or practises the art of healing; one who, being duly qualified, prescribes remedies for diseases; specifically one who holds a certificate showing that he has passed an examination before a competent authority, such as the medical colleges of the United States or the State boards of medicine, authorizing him to practise. Strictly speaking a physician differs from a surgeon, in that the former prescribes remedies for diseases, while the latter performs operations.

Physics, a study of the phenomena presented by bodies. It treats of matter, force and motion; gravitation and molecular attraction, liquids, gases, acoustics, heat, light, magnetism, and electricity. It is called also natural or mechanical philosophy. In its broadest acceptance the term physics includes chemistry; specifically it is limited to those phenomena based on the molecule as a unit, whereas the unit of chemistry is the atom.

Physiognomy, the art or science of judging of a person's nature or character by his outward look, especially by his facial features and characteristics. In the ordinary business of life, all men are more or less influenced by the belief that the character and disposition of a person may, in some measure, be judged of by his physical appearance, and none have more confidence in this way of judging than those who have most occasion to act on it.

Physiology, the science which treats of the processes which go on in the bodies of living beings under normal conditions, and of the use of their various parts or organs. It is divided into plant physiology, animal physiology (according to whether plants or animals are the subject of study), and human physiology (a branch of animal physiology in so far as it relates to man).

Pianoforte, a musical instrument, the sounds of which are produced by blows from hammers, acted on by levers called keys. This is probably the most widely-known and generally-used musical instrument in the world. The earliest form of pianoforte, early in the 18th century, was perhaps, in some respects, inferior to a fine harpsichord, but it possessed the elements of expansion, as now exhibited in a modern grand trichord pianoforte of more than seven octaves compass, with every gradation of sound, from pianissimo to a splendid fortissimo, and the most sensitive and delicate mechanism between the finger and the hammer.

Piassaba, or Piassava, a strong vegetable fiber imported from Brazil, and largely used for making brooms. It is chiefly obtained from palms.

Piaster, or Piastre, a coin of various values. The gold piaster of Turkey = 4.4c.; the silver piaster = 4.35c.; the Egyptian piaster = 4.9c.; the Spanish piaster is synonymous with the United States dollar. The old Italian piaster was equivalent to about 89 cents.

Piatt, Donn, an American journalist; born in Cincinnati, Ohio, June 29, 1829; was secretary of legation at Paris, and was for nearly a year charge d'affaires; during the Civil

War was assistant adjutant-general on the staff of Gen. Robert C. Schenck; was one of the founders of the New York "Sun" and afterward of the Washington "Capital," which he edited for two years. He died in Cleveland, O., Nov. 12, 1891.

Piatt, John James, an American poet; born in Milton, Ind., March 1, 1835. He entered journalism; became clerk of the United States Treasury Department and of the House of Representatives; and from 1882 to 1894 was consul at Cork, Ireland. His works include: "Poems by Two Friends," with W. D. Howells; "Poems in Sunshine and Firelight"; "Idylls and Lyrics of the Ohio Valley"; etc.

Piatt, Sarah Morgan (Bryan), an American poet, wife of John J.; born in Lexington, Ky., Aug. 11, 1836. Her best-known works are: "A Woman's Poems"; "A Voyage to the Fortunate Isles"; "Dramatic Persons and Moods"; and "An Enchanted Castle."

Piazza, a square open space surrounded by buildings or colonnades; popularly, but improperly, applied to an arcaded or colonnaded walk under cover, and even to a veranda.

Pica, an alphabetical catalogue of things and names in rolls and records; in medicine, a vitiated appetite, which causes the person affected to crave things unfit for food, as coal, chalk, etc.; in printing, a name given to a size of type, 72 ems to the foot, or 6x6 to the square inch. It is the standard of measurement in printing.

Piccini, Niccolo, an Italian musical composer; born in Bari, Italy, in 1728. He composed comic and serious operas, chiefly for the stages of Rome and Naples, with such success that for many years he was without a rival in Italy. He wrote over 150 operas, besides numerous oratorios and cantatas. He died in Passy, France, May 7, 1800.

Piccolo, a small flute, having the same compass as the ordinary orchestral flute, but its sounds are one octave higher than the notes as they are written; called also an octave flute.

Piccolomini, a distinguished Siennese family, still flourishing in Italy in two branches. The two most celebrated members are: (1) Æneas Sylvius Bartholomæus, afterward Pope Pius II. (2) Octavio, a grand-nephew of the first; born in 1599, died in Vienna in 1656. He served in the armies of the German emperor, and became one of the distinguished generals in the Thirty Years' War. He was a favorite of Wallenstein, who entrusted him with a knowledge of his projects, when he purposed to attack the emperor. In spite of this he made himself the chief instrument of Wallenstein's overthrow, and after the latter's assassination (1634) was rewarded with a portion of his estates.

Pice, a small East Indian coin, value about three-quarters of a cent.

Pichegru, Charles, a French military officer; born in Arbois, France, Feb. 16, 1761, of humble parents, but receiving a good education under the monks of his native town. Entering the army he rose to be sergeant. The revolution elevated him to the rank of general, and, in 1794, he succeeded General Hoche in the command of the Army of the North. In 1797 he was elected a member of the Legislative body; but his opposition to the Directory, and his speeches in favor of the royalist emigrants, occasioned an accusation against him as designing to restore royalty. He was ordered without trial to be transported to Cayenne, whence he escaped to England, where he remained till the spring of 1804; he returned to Paris, was again apprehended and sent to the Temple, where he was found strangled in his bed, April 5, 1804.

Pickens, Andrew, an American military officer; born in Paxton, Pa., Sept. 13, 1739, of Huguenot ancestry. In 1752 he removed to South Carolina; was engaged in the expedition against the Cherokees in 1761. During the Revolution he was promoted Brigadier-General; took part in the defense of South Carolina against the British. He served in Congress from 1793 to 1795; and made treaties with the Indians. He died in Tomassee, S. C., Aug. 17, 1817.

Pickens, Israel, an American politician; born in North Carolina, in 1780. He was a Democratic member of Congress from North Carolina in 1811–1817; governor of Alabama in 1821–1825; and became United States

Senator in 1826. He died near Matanzas, Cuba, in 1827.

Pickens, Fort, a fort on Santa Rosa Island, Pensacola harbor, held by a small Union force under Lieut. A. J. Slemmer at the beginning of the Civil War. It refused to surrender when besieged by the Confederates in 1861, and was held till reinforced.

Pickerel, a small pike, a young pike. The term is applied to several species of fishes belonging to the pike family.

Pickering, Charles, an American physician, grandson of Timothy; born in Susquehanna co., Pa., Nov. 10, 1805. He traveled extensively, and published the volumes: "The Races of Man and their Geographical Distribution"; "Geographical Distribution of Animals and Man"; "Chronological History of Plants." He died in Boston, March 18, 1878.

Pickering, Edward Charles, an American astronomer, great-grandson of Timothy Pickering; born in Boston, Mass., July 19, 1846; was graduated at Harvard in 1865; Professor of Astronomy and Geodesy, and Director of the Observatory at Harvard after 1876. On July 21, 1901, he photographed the spectrum of lightning from the study of which he developed a revolutionary scientific theory of the compound nature of the so-called chemical elements.

Pickering, John, an American philologist, son of Timothy; born in Salem, Mass., Feb. 7, 1777. He held many important public positions; was president of the American Academy of Arts and Sciences, and a member of various learned associations at home and abroad. He published a paper on the "Adoption of a Uniform Orthography for the Indian Languages"; a "Vocabulary of Words and Phrases Peculiar to the United States"; etc.; and wrote many pamphlets on scientific and political questions. He died in Boston, May 5, 1846.

Pickering, Timothy, an American statesman; born in Salem, Mass., July 17, 1745; was graduated at Harvard in 1763, and admitted to the bar in 1768. He participated in the battle of Lexington; in 1776 joined the Continental army in command of 700 men; was soon appointed adjutant-general by Washington; in 1780 was selected for the post of quartermaster of the army, and from that time till the close of the war conducted his department with great skill. Shortly after his resignation, he united with Patrick Henry and Alexander Hamilton in opposing the measure that drove the Tories from the country. He negotiated a treaty between the United States and the Six Nations in 1791, and a month later was appointed Postmaster-General. He was Secretary of State under Presidents Washington and Adams, but was dismissed during the "X. Y. Z." papers dispute in 1800. He retired from politics for a time, but was elected to the United States Senate in 1804, and from that time continued actively in politics. He died in Salem, Jan. 29, 1829.

Pickering, William Henry, an American astronomer; born in Boston, Mass., Feb. 15, 1858; brother of Edward Charles Pickering; was graduated at the Massachusetts Institute of Technology in 1879; became assistant professor at the Harvard Observatory; and conducted several expeditions to observe the total solar eclipses in different parts of the Western Hemisphere in 1878–1893. He established astronomical stations in Southern California in 1889; at Arequipa, Peru, in 1891; and at Mandeville, Jamaica, W. I., in 1900. He has climbed over 100 mountain peaks.

Picket, a stake with a sharpened end, used in laying off ground for fortifications. Also a stake sharpened at both ends; one driven into the ground and the other acting as an obstacle to the advance of the enemy. Also a guard posted in front of an army to give notice of the approach of the enemy; an outlying picket.

Pickett, George Edward, an American military officer; born in Richmond, Va., Jan. 25, 1825; was graduated at the United States Military Academy in 1846; served in the Mexican War as lieutenant and was made captain in 1855. In 1861 he left the United States service and entered the Confederate army. He was commissioned Brigadier-General and was distinguished throughout the war for bravery and activity. In 1862 he was made Major-General. He took a prominent part in the battles of Fredericks-

burg, Gettysburg (where his division made the famous "Pickett's charge"), Petersburg, and Five Forks. He died in Norfolk, Va., July 30, 1875.

Pickles, a term generally applied to vegetables preserved in vinegar, with or without spices; though the term "pickled" applies to animal food preserved in salt. The vegetables most often pickled are cabbage, cauliflower, gherkins (young cucumbers), French beans, onions, walnuts, mushrooms, and nasturtiums. Chile peppers and sweet peppers, olives, and capers are the most common kinds of imported pickles and mangoes are occasionally used.

Picquart, George, a French military officer; born in Strasburg in 1854; was educated at St. Cyr, 1872–1874, and at the General Staff School in 1874–1876, gaining high places at the examinations in both schools. In 1896 he was given the rank of lieutenant-colonel, but then he began his inquiries into the Dreyfus case, moved thereto by certain discoveries which he made as to Major Esterhazy. In this he was at first encouraged by his official superiors, but afterward discouraged, and in January, 1897, he was sent in disgrace to Tunis. He returned to take a prominent part in the inquiries and legal proceedings which took place in the winter of 1897 and during 1898, and his evidence formed the strongest proof of the illegality of the trial at which Dreyfus was condemned, and of the astounding methods employed by the War Office to hush up the affair. In February, 1898, he was placed on the retired list, and afterward prosecuted on a charge of revealing War Office secrets. He was released after a long imprisonment, and was one of the important witnesses in the Dreyfus trial at Rennes.

Picton, Sir Thomas, a British military officer; born in Poyston, Pembrokeshire, England, in August, 1758. He entered the army in 1772. In 1794 he went out to the West Indies; took part in the conquest of several of the islands, including Trinidad, and was appointed (1797) governor of the last named, being shortly afterward promoted general. There he plotted for the overthrow of Spanish rule in South America. Later he was with Wellington, fought at Quatre Bras, and at Waterloo fell leading his men to the charge, June 18, 1815.

Pidgin, Charles Felton, an American statistician; born in Roxbury, Mass., Nov. 1, 1844. He invented many machines for the mechanical tabulation of statistics, among them the electric adding and multiplying machine, addition register, and typewriter tabulator. He has written novels and musical compositions.

Pierce, Franklin, an American statesman, 14th President of the United States; born in Hillsboro, N. H., Nov. 23, 1804. He was educated in the schools of his native State and at Bowdoin College, where he studied in company with Longfellow, Hawthorne, and Prentiss, graduating in 1824. In 1833 he entered Congress, serving four years, and in 1837 was elected to the United States Senate, being the youngest member of that body, that contained such men as Webster, Clay, Calhoun, Benton, Buchanan, and Silas Wright. In 1842 he resigned from the Senate and retired to private life, declining several public offices tendered him. In 1846 he enlisted for the Mexican War, was appointed brigadier in the volunteer army, and led his brigade in the battles of Contreras and Churubusco. In 1852 he was nominated for the presidency on the 49th ballot, by the Democratic National Convention, and was elected by an electoral majority over General Scott of 254 to 42. During his administration the Missouri Compromise was repealed, a reciprocity treaty for trade with the British American colonies was made; a treaty with Japan was established; and the Mexican boundary disputes settled. After his term expired, failing of a renomination, he traveled abroad for three years, and, returning, lived thereafter in retirement at Concord, where he died, Oct. 8, 1869.

Pierce, Henry Niles, an American clergyman; born in Pawtucket, R. I., Oct. 19, 1820. He spent many years in the West as a missionary, and was consecrated Protestant Episcopal Bishop of Arkansas in 1870, being the first incumbent and holding the office for 25 years. He published many essays, sermons, and reviews; and a volume of poems, etc. He died Sept. 5, 1899.

Pierpont, Francis Harrison, an American statesman; born in Monongalia co., Va. (now W. Va.), in 1815. At the beginning of the Civil War he became governor of the counties of Virginia that remained loyal to the Union, and were organized as the State of West Virginia in 1861; was then governor of all the loyal counties in Eastern Virginia; and from June, 1863, till May, 1865, was chief executive of the present Virginia. He died in Pittsburg, Pa., March 24, 1899.

Pierrepont, Edwards, an American diplomatist; born in North Haven, Conn., March 4, 1817; was graduated at Yale in 1837, and at its Law School in 1840; became a member of the Ohio bar, and after five years removed to New York city. He was elected a judge of the Superior Court of New York in 1857. In 1875 he became attorney-general of the United States in Grant's administration; and in the following year was appointed United States minister to Great Britain. He tried many famous cases during his professional career, and was noted as an orator. He died in New York city, March 6, 1892.

Pigeon English, the dialect used by English and American residents in China in their dealings with the native traders. It is a conglomeration of English and Portuguese words in Chinese idiom.

Pig Iron, iron in oblong masses, or "pigs," as turned out by the smelting furnace. The world's product of pig iron is from 25,000,000 to 30,000,000 tons, and the product of the United States during part of the last half-year was at the rate of half the world's product. The United States could make with its present plants 18,000,000 tons of pig a year, and its iron and steel trade today commands the world's markets.

Pigments, materials used for imparting color, especially in painting, but also in dyeing or otherwise.

Pika, the calling hare, an animal nearly allied to the hares. It is found in North America, Russia, and Siberia, and is remarkable for the manner in which it stores up its winter provision, and also for its voice, the tone of which so much resembles that of a quail as to be often mistaken for it.

Pike, a military weapon, consisting of a narrow, elongated lance-head fixed to a pole or a simple spike of metal. The end of the staff had also a spike for insertion in the ground, thus allowing a musketeer to keep off the approach of cavalry while attending to his other arms. It is now superseded by the bayonet. Also, a fish, the common pike. It is one of the larger fresh-water fishes, sometimes attaining a length of five or six feet, and much esteemed for food.

Pike, Albert, an American writer; born in Boston, Mass., Dec. 29, 1809. He became a lawyer in Arkansas, where he revised the statutes. He was attorney for the Cherokees, receiving at one time a fee of $100,000. In 1839 his "Hymns of the Gods" was published. He also wrote works on Masonry. He served in an Arkansas regiment during the Mexican War, and in the Civil War organized some Indian regiments which he led in the battles of Pea Ridge and Elkhorn. After the war he was editor of the Memphis "Appeal" till 1868. Died in Washington, D. C., April 3, 1891.

Pike, Mrs. Mary Hayden (Green), an American novelist; born in Eastport, Me., Nov. 30, 1825. She will be best remembered as the author of "Ida May," a novel dealing with slavery and Southern life, which had a large sale.

Pike, Zebulon Montgomery, an American military officer; born in Lamberton, N. J., Jan. 5, 1799; was appointed an ensign in his father's regiment in 1779; conducted an expedition sent by the government to trace the Mississippi to its source in 1805; also made explorations in Louisiana Territory, discovering Pike's Peak and reaching the Rio Grande in the course of his travels. In 1813 he was promoted Brigadier-General, and on April 13 of that year while in command of the attack on York (now Toronto), in Upper Canada, was killed.

Pike Perch, a genus of fishes closely allied to the perch, but showing a resemblance to the pike in its elongated body and head. It occurs in the fresh waters of North America, such as the Great Lakes, the Upper Mississippi, and the Ohio.

Pike's Peak, a peak of the Rocky Mountains, in Colorado, 65 miles S.

of Denver, discovered by Captain Pike, U. S. A., in 1806. It rises to a height of 14,147 feet. On its summit is one of the highest meteorological stations in the world; while at the base, at Colorado Springs, there is a low level station. There is a railway to the top, 9 miles long (4½ miles of curves), with a maximum gradient of 1 in 4.

Pilate, Pontius, a Roman ruler, who became governor of Judæa, A. D. 26. He commanded in that country 10 years. The Jews brought Jesus Christ before Pilate, who, perceiving that envy and malice occasioned their charges, would have scourged the prisoner and dismissed him, but being threatened with the wrath of Cæsar, Pilate delivered Jesus, whom he pronounced innocent, to be crucified. He is said to have subsequently treated the Samaritans with great cruelty, for which he was recalled by Tiberius, and banished to Gaul, where he slew himself, A. D. 37 or 38.

Pilgrimage, a journey undertaken by a pilgrim; specifically, a journey to some distant place, sacred and venerable for some reason, undertaken for devotional purposes. In Scripture, the journey of human life. (Gen. xlvii: 9.) Pilgrimages are an essential part of the Hindu and Mohammedan systems, and the visits to Jerusalem three times a year of the Jewish race were of the nature of pilgrimages.

Pilgrim Fathers, the name given to 102 Puritans, who sailed in the "Mayflower," from Plymouth, on Sept. 6, 1620, to seek in America the religious liberty denied them in England. Landing on Plymouth Rock, they, on Dec. 25, 1620, founded a colony, which became the germ of the New England States.

Pillory, formerly a common instrument of punishment for persons convicted of forestalling, use of unjust weights, perjury, forgery, libel, etc. It consisted of a frame of wood, erected on a pillar or stand, and furnished with movable boards, resembling those of the stocks, and holes through which the offender's head and hands were put. In this position he was exposed for a certain time to public view and insult. The use of the pillory was abolished in France in 1832, in England in 1837, and in the United States about 1839, except in the State of Delaware.

Pillow, Fort, a defensive work, erected by the Confederates during the Civil War, about 40 miles N. of Memphis, Tenn., and abandoned by them, June, 1862, and occupied by the Union forces till April, 1864, when it was taken by the Confederates under General Forrest, and the garrison killed.

Pillow, Gideon Johnson, an American military officer; born in Williamson co., Tenn., June 8, 1806; served with distinction during the Mexican War, first as a Brigadier-General and later as a Major-General of volunteers. In the Civil War he was appointed a Brigadier-General in the Confederate army; was second in command at Fort Donelson in February, 1862, and with his chief, Gen. John B. Floyd, escaped, leaving General Buckner to surrender the fort to General Grant. He died in Lee co., Ark., Oct. 6, 1878.

Pills, medicines made in globules, of a convenient size for swallowing whole, the medicine being usually mixed up with some neutral substance such as breadcrumbs, hard soap, extract of liquorice, mucilage, syrup, treacle, and conserve of roses. The coverings are liquorice powder, wheat flour, fine sugar, and lycopodium. In many cases pills are now enameled or silvered, which deprives them of most of their unpleasantness. Pills are a highly suitable form for administering medicines which operate in small doses, or which are intended to act slowly or not to act at all till they reach the lower intestines.

Pilot, one who, being properly qualified by experience, and having passed certain examinations, is appointed by the competent authority to conduct ships into or out of harbor or along particular coasts, channels, etc., at a certain fixed rate, depending on the draught of the vessel and distance. The pilot has the entire charge of the vessel in the pilot's water.

Pilot Fish, a small pelagic fish, about a foot long, of bluish color, marked with from five to seven broad, dark, vertical bars. It owes its scientific and popular English name to its habit of keeping company with ships and large fish, generally sharks.

Pilot Knob, a remarkable hill in Missouri, about 86 miles S. W. of St. Louis. It is nearly 500 feet high, and is composed almost entirely of magnetic iron ore.

Piloty, Karl von, a German painter; born in Munich, Bavaria, Oct. 1, 1826. Died in Munich, July 21, 1886.

Piman, a linguistic stock of North American Indians who occupy a vast area extending over Southern Arizona and Northwestern Mexico. They number about 80,000.

Pimpernel, a genus of plants. The field pimpernel, a beautiful annual, is commonly known as the "shepherd's or poor man's weather glass," from the fact that its flowers do not open in rainy weather. The bog pimpernel grows in the drier parts of marshes.

Pin, a piece of wood, metal, etc., generally pointed and used for fastening separate articles together, or as a support; a peg, a bolt. Also a small piece of wire, generally brass, headed and pointed, used as a fastening, etc., for dress, or for attaching separate pieces of paper, etc., or as an ornament, for which purpose they have been employed since antiquity.

Pins were made by hand of metal in the 16th century, and were very costly. Before that time small skewers of ivory or wood were used. The first pin-making machine was made in 1824 by an American living in England. Many improvements have since been introduced.

Pinckney, Charles Cotesworth, an American statesman; born in Charleston, S. C., Feb. 25, 1746. He was Washington's aide-de-camp at the battles of Brandywine and Germantown, and afterward, as colonel, saw much active service, till 1780, when he was taken prisoner at the surrender of Charleston, and retained till the close of the war. A member of the convention that framed the Constitution of the United States (1787), he introduced the clause forbidding religious tests as a qualification for office. He declined the secretaryship of war in 1794, and of state in 1795; in 1796 he was sent as minister to France, but the Directory refused to receive him, and he had to quit the country. It was while on this mission that, when it was intimated that peace might be granted in return for a money payment, he made the reply, "Millions for defense, but not a cent for tribute." In 1800–1808 he was thrice an unsuccessful Federalist candidate for the presidency. He died Aug. 16, 1825.

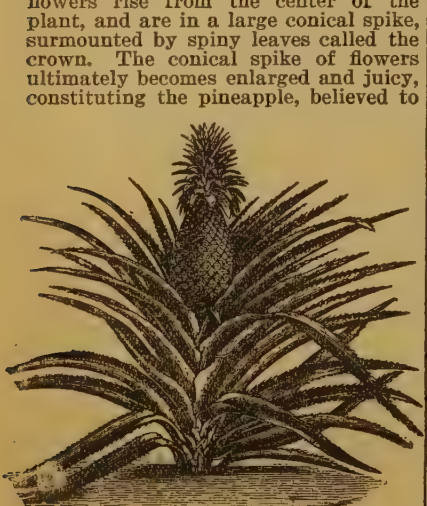
Pinckney, Thomas, an American diplomatist, brother of Charles C.; born in Charleston, S. C., Oct. 23, 1750. In the Revolutionary War as aide to General Lincoln he distinguished himself at the assault on Savannah and was severely wounded at Camden in August, 1780. He was governor of South Carolina in 1787–1789; United States minister to Great Britain in 1792–1794, and to Spain in 1794–1796; a Federalist candidate for the presidency in 1796; and member of Congress in 1797–1801. He died in Charleston, Nov. 2, 1828.

Pindar, the great Greek lyric poet; born in or near Thebes, in Bœotia, about 522 B. C. Pindar excelled in all varieties of choral poetry, hymns to the gods, pæans, odes for processions, drinking songs, etc. But the only poems of his now extant are the "Epinikia, or Triumphal Odes," composed in celebration of victories at the great public games, the Olympian, Pythian, Nemean, and Isthmian. Pindar attained the highest renown in his own age, and as a lyrical poet has no rival. When Thebes was destroyed by Alexander, the conqueror spared the house of Pindar. He died in 443 B. C.

Pine, a genus of trees of the natural order Coniferæ. The Linnæan genus includes all kinds of fir, larch, and cedar; but as now limited the genus Pinus is distinguished by monœcious flowers and woody cones with numerous two-seeded scales, the scales having an angular truncated apex. The leaves are linear and very narrow, of a very dark green color, growing in clusters or in pairs, and surrounded by scarious scales at the base. To this genus belong many noble and useful trees. Many species of pines, some of them very beautiful and very valuable, are found in North America. Besides those long known, and which are found in the States and colonies near the Atlantic, a number of the noblest species of this genus have, during the 19th century, been discovered in California and the N. W. parts of the Continent. The red Canadian

pine is found from Canada to the Pacific, but does not reach far S. in the United States. It is the yellow pine of Canada and Nova Scotia.

Pineapple. The leaves are hard and fibrous, with spiny edges. The flowers rise from the center of the plant, and are in a large conical spike, surmounted by spiny leaves called the crown. The conical spike of flowers ultimately becomes enlarged and juicy, constituting the pineapple, believed to



PINEAPPLE.

be the finest of fruits. More than 50 varieties have been produced. The plant grows in the S. portion of the United States and in Hawaii. In the islands they sometimes reach the weight of 17 pounds, though the average weight is six. Since 1883 there have been large exports of this fruit from the various islands, and the production is increasing. It was first cultivated in Holland.

Pine Bullfinch or **Pine Grosbeak,** a well-known bird with head, neck, fore part of breast, and rump bright red; back grayish-brown or black, edged with red; lower parts light gray; two white bands on the dusky wings; larger than the bullfinch. Common in the Arctic regions, whence it migrates S. in numbers in the United States, more sparingly in Europe; called also pinefinch.

Ping-Pong, table lawn tennis, a game that was introduced from England and became very popular in the United States. The game is played very much as is the regular game of tennis.

Pingree, Hazen S., an American manufacturer; born in Denmark, Me., Aug. 30, 1842. He enlisted in the United States army in 1862; served throughout the war and was in the principal battles. At the close of the war he settled in Detroit, Mich., and engaged in the shoe business, subsequently becoming the head of the largest factory of its kind in the West. He was elected mayor of Detroit in 1889, on the Reform ticket. His radical ideas on the reform of monopolies, etc., caused much agitation, especially in connection with street car companies. He also instituted the "potato patch," a scheme for employing applicants for charity in productive labor, a plan which has been adopted by other cities. In 1896 he was elected governor of Michigan, holding the office of mayor also, till March 19, 1897, when according to a decision of the Supreme Court he relinquished the latter office. He was reëlected governor in 1898. He died June 18, 1901.

Pinkerton, Allan, an American detective; born in Glasgow, Scotland, Aug. 25, 1819. In 1840 he went to Canada and thence to Chicago, where in 1850 he joined the detective department. Subsequently he organized the detective agency which still bears his name. He wrote many interesting stories of his experiences, which were afterward collected in one volume. He died July 1, 1884.

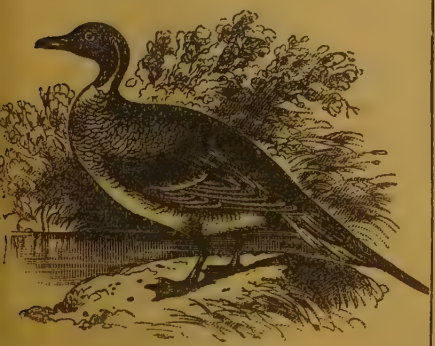
Pinkney, William, an American diplomatist; born in Annapolis, Md., March 17, 1764; was admitted to the bar in 1786; was a member of the Legislature of his State that ratified the Constitution of the United States. In 1796 Washington appointed him a commissioner to determine the claims of American merchants to compensation for losses and damages caused by the English government. In 1806 he was sent with James Monroe to treat with the English government regarding the latter's repeated violations of the rights of neutrals and was resident minister in London in 1807–1811, when President Madison appointed him attorney-general of the United

States. In 1816 he was appointed minister to Russia and special envoy to Naples. After his return in 1818 he resumed law practice. In 1820 he was elected to the United States Senate. He died in Washington, D. C., Dec. 25,. 1822.

Pinnated Grouse, known also as the prairie hen, or prairie chicken. The male is remarkable as possessing two erectile tufts in the nape, and an air bladder (connected with the windpipe, and capable of inflation) on each side of the neck, in color and shape resembling small oranges; general plumage brown, mottled with a darker shade; habitat, prairies of the Mississippi valley, from Louisiana, N.

Pint, a measure of capacity used both for dry and liquid measures. It contains 34.65925 cubic inches, or the eighth part of a gallon. In medicine it is equivalent to 12 ounces.

Pintail Duck, has the upper parts and flanks ash, with narrow stripes of



PINTAIL DUCK.

black; under parts white; head umber-brown; tail pointed. It inhabits the N. of America and Europe.

Pinzon, Vincent Yanez, and **Martin Alonzo** (brothers), Spanish navigators, who had commands in Columbus' first voyage, and by whose exertions mainly it was that a sufficient number of men were induced to risk their lives on this perilous enterprise. Vincent Yanez was the more distinguished of the brothers; he made several voyages, on the most important of which he sailed in December, 1499, and discovered Brazil and the river Amazon, three months before Cabral took possession of South America for the crown of Portugal.

Pioneer, one of a body of soldiers equipped with pickax, spade, etc., whose duty it is to clear and repair roads, bridges, etc., as far as possible, for troops on the march. They are placed at the head of the battalion of which they form a part, and are commanded by a pioneer sergeant. Also, one who goes before to prepare or clear the way, or remove obstructions for another, especially in the settlement of a new region.

Pipa, a genus of Batrachian reptiles, closely allied to the common toad, but distinguished by the body being horizontally flattened, the head large and triangular, tongue wanting, tympanum concealed beneath the skin, the eyes small, placed near the margin of the upper jaw. The best-known species is the Surinam toad, which is considerably larger than the common toad of this country.

Pipe, a wine-measure, usually containing two hogsheads or 105 imperial or 126 wine gallons; two pipes or 210 imperial gallons make a tun. The size of the pipe varies according to the kind of wine contained; a pipe of Madeira contains 110 wine gallons; of sherry, 130; of port, nearly 138, and Lisbon, 140.

Pipe, Clay, a variety of clay adapted by its plasticity and freedom from impurities for the manufacture of pipes.

Pipefish, a popular name for certain fishes including the broad-nosed pipefish; the ocean pipefish; the worm, or little pipefish; and the straight-nosed pipefish.

Piping Crow, a bird from New South Wales. It has great powers of mimicry; called also the flute player.

Pipistrelle, the most widely distributed of the bats; color reddish-brown, paler beneath. The wings extend down to the base of the toes, and their membrane, like that of the ears, is of a dusky tint. This bat is specially a dweller in temperate regions, its period of hibernation is short, and the tail is used as an organ of prehension.

Pipit, or **Titlark,** a genus of perching birds possessing striking affinities with the larks, which they resemble in the large size of the hinder claw, but commonly classed with the wagtails, which they closely resemble in their habits of running swiftly on the ground. One species is common in the United States. All the pipits build their nests on the ground. The song in all consists of a clear, simple note.

Pippin, a name given to several varieties of apples.

Piracy, the act, practice, or crime of robbing on the high seas. This offense at common law consists in committing those acts of robbery and depredation on the high seas which if committed upon land would have amounted to felony there. But other offenses have, by various statutes, been made piracy, and liable to the same penalty. Thus trading with, or in any

PIPEFISH.

way aiding, known pirates, is piracy. So, too, any commander or seaman of a ship who runs away with any ship, boat, goods, etc., or who voluntarily delivers such up to any pirate, is guilty of piracy. Any one who conveys or removes any person as a slave is also by statute law of most civilized nations guilty of piracy. The penalty is death, or some lesser punishment. The most famous execution of pirates was on the beach at Newport, Rhode Island, in the colonial period, when 30 pirates from one vessel were hanged at one time.

Pirai, or **Piraya,** a voracious fresh-water fish of tropical America. It is three or four feet in length, and its jaws are armed with sharp lancet-shaped teeth, from which cattle when fording rivers sometimes suffer terribly.

Pisa, a city of Central Italy, capital of the province of Pisa, on the Arno, 8 miles from its mouth, 13 miles N. E. of Leghorn, and 50 miles W. of Lucca. The walls are 5 miles in circuit. The Arno flows through the city, and is crossed by several bridges, the principal one being of fine marble. The cathedral, with its attendant buildings, the baptistery, the cemetery and the belfry, is perhaps, the finest specimen that exists of the style of building called by the Italians the Gotico-Moresco. The most remarkable buildings in Pisa are the Campo Santo and the belfry, or campanile, a cylindrical tower, 178 feet in height, constructed of successive rows of pillars, chiefly of marble; it is extremely graceful in its proportions, but its chief peculiarity consists in its inclination about 13 feet out of the perpendicular, whence it is commonly called the Leaning Tower of Pisa. The University of Pisa is one of the oldest in Italy; it has 56 professors and about 1,000 students. Galileo, who was a native of Pisa, was formerly one of the professors.

Pisa, Council of, a church council generally included in those called ecumenical, met and opened in Pisa March 25, 1409, and the 23d and last session of which was held Aug. 7 following. Its aim was to end the schism which had divided the Western Church for 30 years; and with this view the leading cardinals, finding that neither of the rival Popes, Gregory XII. and Benedict XIII., would keep their promises to abdicate, had set aside the claims of both, and themselves convoked a general council. It was attended from first to last by 24 cardinals, 4 patriarchs, 80 bishops, 102 proctors of bishops, 87 abbots, 200 delegates of abbots, besides many generals of orders, doctors, deputies of universities, and ambassadors. After the rival Popes failed to appear in obedience to its summons, the council formally tried the claims of both in turn, and deposed them as schismatics and heretics. The cardinals then formed themselves into conclave and elected Cardinal Philargi, who assumed the name of Alexander V. But the council, instead of getting rid of the contending Popes, had only added a third, and the Church of Rome

continued to be distracted for eight years longer, down to the time of the Council of Constance.

Pisces, in astronomy, the 12th and last of the zodiacal constellations.

Pisgah, a name that seems to have applied generally to the mountain range or district to the E. of the Lower Jordan, identical with, or itself a part of, the mountains of Abarrim, one of the summits of which is Mount Nebo (the modern Neba), 2,644 feet above the level of the Mediterranean. From this point Moses enjoyed his glimpse of the Promised Land, in early spring.

PISA: LEANING TOWER AND CATHEDRAL

Pisistratus, a citizen of Athens who raised himself to the sovereign authority in the time of Solon (to whom he was related) 560 B. C. He was a beneficent ruler, and did much to promote the rise of Greek literature. We owe to him the poems of Homer in their present form, Pisistratus having collected them, as they were scattered in detached parts throughout Greece, and given them orderly arrangement.

Pisquow, or Pishquitpah, a tribe of North American Indians living formerly on the Wenatchee or Pisquow river, Washington. The name has also been used collectively and applied to the Methow and other tribes in Okanogan county of that State. They are now on the Yakima reservation, Washington.

Pistacio Nut, the fruit of the pistacia vera. The kernel is very oily, of a peculiar flavor and bright green in color, and is much used in confections, etc.

Pistole, a gold coin once current in Spain, France, and the neighboring countries; and its average value was about $3.85.

Pita Flax, flax made from the fiber of the maguey and used for twine, rope, hammock meshes, etc. In Mexico it is also used for oakum. Labillardiere found that its strength is to that of common flax as 7 to 11¾.

Pitaval, Francois Gayot de, a French lawyer; compiler of the famous collection of "Celebrated Cases"; born in 1673, served in the army, but became an advocate, and was known as an industrious and painstaking compiler. Of his great work there have been numerous abridgments, continuations, and translations; and his name has become so identified with the collecting of criminal cases that a similar work, published by various editors in Leipsic in 1843 and succeeding years, was called "A New Pitaval." He died in 1743.

Pitcairn Island, a solitary island in the Pacific Ocean, between Australia and South America, in lat. 25° 3′ S. and lon. 130° 8′ W., measures 2½ miles by 1 mile. In 1790 it was taken possession of by nine of the mutineers of H. M. S. "Bounty," with six Tahitian men and 12 women, the ringleader being called Christian. According to one account, the white men and the Tahitians murdered each other at intervals, till at the end of 10 years John Adams was left alone, with eight or nine women and several children; and from them the present inhabitants of the island are descended. Adams, changed by these tragic adventures, and sobered by his responsibilities, set about the education of his companions in Christian principles. The little colony was unknown to the world till 1808, when it

was "discovered" by Captain Folger of the American sealing ship "Topaz"; the first British vessel to visit it did not arrive till 1814. The island was annexed to Great Britain in 1839. Nearly 200 of the islanders were transferred to Norfolk Island in 1856, but a number of them afterward returned. Pitcairn Island enjoys a lovely climate; its mountainous surface reaches 1,008 feet in Outlook Ridge; the soil is fertile, and produces yams, cocoanuts, bread fruit, sweet potatoes, bananas, etc. The people bear a high character for virtue, contentedness and uprightness, and choose their own pastor and magistrate.

Pitch, a term applied to a variety of resinous substances of a dark color and brilliant luster, obtained from the various kinds of tar produced in the destructive distillation of wood, coal, etc. Pitch is extensively used in shipbuilding, etc., for closing up seams, also for keeping wood from speedy decay, or iron railings from rusting when exposed to the weather.

Pitcher Plant. The name is applied to any plant with a pitcher-like appendage. The California pitcher plant is well known in that region.

Pitch Stone, a vitreous rock of pitch-like luster and imperfect conchoidal fracture; brittle. Analyses indicate that it is probably a vitreous form of quartz, felsite, or of trachyte. Color mostly blackish-green or dark olive-green.

Pitchurim Beans, the name given to a South American species of laurel, the drupes of which are used by chocolate makers as a substitute for vanilla.

Pithecanthropus Erectus, the name given to the fossil remains of a prehistoric animal found in Java, and which represents a form intermediate between man and the higher apes. Recent explorations indicate that this animal may yet be living in remote Java forests.

Pithom, one of the store cities which the children of Israel built for Pharaoh (Exod. i: 11), conclusively identified in 1883 by the excavations of M. Naville with the deserted Arab village Tell El-Maskhuta, on the fresh-water canal and railway line from Cairo to Ismailia, about half-way between Ismailia and Tell El-Kebir.

Pitman, Benn, an American phonographer; born in Trowbridge, England, July 24, 1822; brother of Sir Isaac Pitman, the inventor of phonography; was educated in his brother's academy; lectured and taught phonography throughout Great Britain for 10 years. He came to the United States in 1853, and founded the Phonographic Institute in Cincinnati; invented the electro-process of relief engraving in 1856; was military recorder of State trials during the Civil War.

Pitman, Sir Isaac, an English stenographer; born in Trowbridge, England, Jan. 4, 1813. He was the inventor of the phonetic system of shorthand writing and published his first treatise on the subject entitled "Stenographic Soundhand" in 1837. He was the head of the Phonetic Institute at Bath, and was identified with the spelling reform. He died Jan. 22, 1897.

Pitt, William, an English statesman; born in Hayes, England, May 28, 1759; was educated at Cambridge University; studied law and was elected to Parliament in 1780. In 1783 he became prime minister; was active in the negotiations of peace with the United States, and was instrumental in the passage of many important measures. He died in Putney, England, Jan. 23, 1806. For the elder Pitt see Chatham.

Pittsburg (according to its city charter, Pittsburgh), a city, port of entry, and county-seat of Allegheny co., Pa.; at the confluence of the Monongahela and Allegheny rivers, at the head of the Ohio river, 353 miles W. of Philadelphia; area, 29 square miles; pop. (1900) 321,616.

The city owns a waterworks system, costing over $7,000,000. The reservoirs have a storage capacity of 68,000,000 gallons, and the water is distributed through 300 miles of mains. There are in all 230 miles of streets, of which 200 miles are paved. The sewer system covers 220 miles. The city is lighted by electricity. The annual death rate averages 19 per 1,000.

The principal public buildings are the Allegheny court house, the Carnegie Library and Institute, with museum, music hall, and art gallery, and having an endowment of $2,000,000; the United States Government

Building, the West Pennsylvania Exposition Society's Buildings; Municipal Hall; United States Arsenal, and the Western State Penitentiary.

The two chief industries are the production of iron and steel; but there are many other flourishing manufactures. The city is well known as the Iron City, for there is nothing in the iron industry which is not here manufactured. The capacity of the iron mills is over 800,000 tons annually, and that of the Bessemer steel mills upward of 400,000 tons. There are in Pittsburg besides blast furnaces and iron and steel works over 1,500 manufacturing establishments, employing more than 60,000 persons. The schools are flourishing and their accommodations keep pace with increasing population. There are over 200 churches in Pittsburg. The most important of these are Trinity (P. E.), St. Peter's (P. E.), First Presbyterian, United Evangelical (German), First Baptist, English Evangelical, etc.

In 1754, at the suggestion of George Washington, the English began to erect a blockhouse on the present site of the city. They were driven away by the French, who built a fort at the junction of the two rivers and named it Du Quesne. In 1758, after two unsuccessful attempts to retake the place, the English under General Forbes made a third attempt, and the French burned and evacuated the fort. In the following year another fort was erected here, named in honor of William Pitt. The British withdrew from the post in 1772, and it was held by Virginia in 1775–1779. The place was incorporated as a city March 18, 1816. In 1877 a railroad strike and riot occurred in which much damage was done to railroad property and for which Allegheny county had to settle at a cost of $4,000,000.

Pius, the name of a number of Popes, as follows:

Pius I., succeeded Hyginus in 142, and died in 157.

Pius II. (Æneas Sylvani Piccolomini); born in Tuscany in 1405, of an ancient and illustrious family. In 1431 he assisted at the Council of Basel as secretary; was afterward secretary to the anti-Pope Felix V., and then to the Emperor Frederick III., who sent him on various embassies. Eugenius IV. chose him for apostolic secretary, Nicholas V. made him a bishop, and Calixtus III. created him cardinal. He was chosen to succeed Claixtus III. in 1458, and in the following year assembled a congress at Mantua for the purpose of arranging a crusade against the Turks. In 1463, by another bull, he retracted his former sentiments respecting the Council of Basel condemning his defense of it, and praying to be condemned as Æneas Sylvius, but listened to as Pius II. He died in Ancona, August, 1464.

Pius V. (Michele Ghislieri); born in Piedmont in 1504, and early entered the Dominican order. He so distinguished himself by his austere life, and his zeal against "heretics," that he was appointed inquisitor in Lombardy, and afterward inquisitor-general. He was created cardinal in 1557, and was chosen to succeed Pius IV., in 1566. He died in May, 1572.

Pius VI. (Giovanni Angelo Braschi); born in Cesena in 1717, and succeeded Clement XIV. in 1775. His first act was to make a reform in the public treasury; he then completed the museum in the Vatican; but the greatest work of his pontificate was the draining of the Pontine marshes. Basseville was sent as envoy from the republic of France to Rome, where he behaved with so much insolence, that the people assassinated him in 1793. General Duphot entered the city with his troops to restore order, but the papal soldiers routed them, and Duphot was slain. On this Bonaparte entered Italy, and made the Pope prisoner in the capitol, which was plundered. The venerable pontiff was carried away by the victors, and hurried over the Alps to Valence, where he died Aug. 29, 1799.

Pius VII. (Gregorio Barnaba Chiaramonti); born in Cesena, in 1742; became a Benedictine monk; was created cardinal in 1785, and after the death of Pius VI., was chosen, after long deliberations of the conclave, to succeed him March, 1800. In 1804 the Pope went to Paris and crowned Napoleon emperor, returning to Rome in May, 1805. Soon after Ancona was seized by the French, and the great quarrel between Napoleon and the Pope began. Pius was arrested by the French officer Miollis

and sent to Savona, and afterward to Fontainebleau, whence he was not permitted to return to Italy till January, 1814. The Congress of Vienna restored the States of the Church to the Pope, who applied himself thenceforth to internal reforms. He re-established the Jesuits and the Inquisition. He died, Aug. 20, 1823.

Pius VIII. (Cardinal Castiglione), became Pope in succession to Leo XII., in 1829. After a short pontificate of one year, he died in 1830.

Pius IX. (Giovanni Mario Mastai Ferretti); born in Singaglia, May 13, 1790; was intended for the army, but resolved to devote himself to the Church. He was nominated by Pius VII. on a mission to the government of Chile, and immediately on his return to Rome he was appointed by Leo XII. to one of the most important of the ecclesiastico-civil departments of administration. In 1840 he was created Cardinal-Archbishop of Imola, in the Romagna. Pope Gregory XVI. died June 1, 1846, and Cardinal Ferretti was elected to the papacy under the name of Pius IX., June 16. But the French Revolution of 1848 gave a much more powerful impulse to the enthusiasm of the Italian patriots. These sweeping changes the Pope was not prepared to support, and from that moment his popularity began to decline. The popular disaffection was greatly increased on his taking for his minister Count Rossi, one of the most aristocratic and unpopular men in Rome. Count Rossi was assassinated Nov. 15, and Pius himself, a few days later, escaped from Rome in disguise, and arrived safely in Gaeta, the first town in the Neapolitan territory, whither he was followed by the members of the papal court and the diplomatic corps. The Pope remained nearly a year and a half at Gaeta and Portici. During his absence, Rome, which was in the possession of the native troops under Garibaldi, was besieged, and at last taken by storm by the French army under General Oudinot, after sustaining some reverses. The Pope left Portici, April 4, 1850, escorted by Neapolitan and French dragoons, and accompanied by the King of Naples and several members of his family. He crossed the frontier at Terracina, April 6, and re-entered Rome April 12, amid the thunder of French cannon. His chief ecclesiastical acts are the formal definition of the dogma of the Immaculate Conception, in December, 1854; and the bull summoning the Ecumenical Council of 1869–1870, which promulgated the doctrine of papal infallibility. In September, 1870, the French troops were withdrawn from Rome, and in October the States of the Church were annexed to the kingdom of Italy, thus ending the temporal power of the Popes. He died Feb. 7, 1878.

Pius X., the present Pope of Rome, family name Giuseppe Sarto (in English, Joseph Taylor), is an Italian, a native of Treviso, where he was born in 1835. It is a curious coincidence that in 1303, exactly six hundred years ago, another native of Treviso was elected Pope. The Sarto family consisted of two boys and six girls. Giuseppe was the younger brother. The family was poor, and to this day all the members are in humble life. The new Pope's elder brother holds a small office under the Government, for which he receives a salary of eighty dollars a year. Two of his sisters, being unmarried, have resided with their now famous brother. He performed the duties of a humble parish priest until 1884, when Pope Leo made him Bishop of Mantua, and, nine years later, he was made a Cardinal and Patriarch of Venice. He took no part in the political affairs of the Church, and seldom went to Rome, but devoted himself to his own diocese, where he won the respect of Protestants, as well as Catholics, by his charities, his interest in social reforms, and his kindness and courtesy. It is stated that he was so generous in his gifts to the poor of his diocese, that he impoverished himself to such a degree that he has been known to pawn his official ring, to provide himself with funds for a temporary emergency. It was noticed after his election to the Pontificate, by a Cardinal who was making an appointment with him, that he was wearing a nickel watch, with a common silk guard. He has chosen to be called Pius X., but the inferences usually drawn from the choice of a name are at fault in this instance, as it is not known which of his nine predecessors of that name

he regards as a model. He is said to be a man of profound learning and sterling honesty of character. Americans who have met him say that in personal appearance and manner he bears a striking resemblance to the late Phillips Brooks. He has dispensed with some of the stately surroundings which the late Pope Leo, who was of noble birth, always maintained. Was elected Pope, Aug. 4, 1903.

Pizarro, Francisco, a Spanish explorer, the conqueror of Peru. He embarked in 1510, with some other adventurers, for America; and, in 1524, he associated at Panama with Diego de Almagro and Hernandez Lucque, a priest, in an enterprise to make fresh discoveries. In this voyage they reached the coast of Peru, but being too few to make any attempt at a settlement, Pizarro returned to Spain, having raised some money, he was enabled again, in 1531, to visit Peru, where a civil war was raging between Huascar, the legitimate monarch, and his half-brother, Atahualpa, the reigning inca. Pizarro, by pretending to take the part of the latter, was permitted to march into the interior where he made the unsuspecting king prisoner; then extorting from him, as it is said, a house full of the precious metals by way of ransom, he had him tried for a pretended conspiracy, and condemned him to be burned, allowing him first to be strangled, as a reward for becoming a Christian. In 1533 the conqueror laid the foundation of Lima; but, in 1537, a contest arose between him and Almagro, who was defeated and executed. Pizarro was murdered by Almagro's followers, June 26, 1541.

Pizarro, Gonzalo, half brother of the preceding; born in 1502. His brother appointed him governor of Quito in 1540, and after the assassination of Francisco, he raised an army against the new viceroy, Blasco Nunez, and the latter was defeated and slain near Quito in 1546. But Pizarro did not long enjoy his success, being beaten, taken prisoner, and beheaded in 1548.

Plague, a peculiarly malignant fever of the continued and contagious type, now believed to be almost identical with the worst kinds of typhus fever. The plague seems to have been the black death of the 14th century. It was known by the name of plague when, in 1665, it slew in London 68,596 people, about one-third of the population.

In the summer of 1896 a very malignant form of disease, known as the "bubonic" plague, made its appearance in Bombay, India, and spread with great rapidity. The bubonic plague receives its name from the fact that it attacks the lymphatic glands in the neck, armpits, groin, and other parts of the body. In general, the disease is spread in the same manner as cholera, except that the cholera germ must enter the intestinal tract, while the germ of the plague may attack any part of the mucous membrane, or be attended by even the minutest abrasion of the skin. But while this germ is so virile and so easily taken into the system, it is one of the most easily killed by disinfection.

The Ten Plagues of Egypt were 10 inflictions divinely sent upon the Egyptians to compel them to emancipate the Israelites from bondage and allow them to quit the land. The first plague consisted in the turning of the waters of Egypt into blood; the second, of frogs that covered the land; the third, of lice annoying both man and beast; the fourth of grievous swarms of flies; the fifth, of murrain that attacked the live stock; the sixth, of boils "breaking forth with blains upon man and upon beast"; the seventh, a severe thunder storm accompanied by destructive hail; the eighth, a plague of locusts that ate what the hail had spared; the ninth, a darkness that could be felt; the tenth, the death of the firstborn of man and beast among the Egyptians.

Plain, an expanse of low-lying territory as distinguished from a tableland or plateau. Speaking broadly, the Western Hemisphere is the region of plains, and the Eastern of tablelands. Nevertheless, the former has in it what is called the Great Northern plain, extending, with the one break in the Ural Mountains, from the shores of the Atlantic nearly to Bering's Strait, and from the Arctic Ocean to the Caucasus and Altai Mountains. In this hemisphere are the Great Central and the Atlantic plains.

of North America, and the great South American plain. "The Plains" was a term applied to a vast stretch of country of the United States then uninhabited save by soldiers, trappers and Indians, which emigrants crossed in going to Utah, or to the Pacific. It is now divided into prosperous States.

Plain, Fort, or **Fort McKean,** a Revolutionary fort at the junction of the Mohawk and Osquaga creeks, N. Y.

Plane, in joinery, a carpenter's cutting and surface smoothing tool, of which there are many varieties, called from some peculiarity of construction or purpose.

Plane Tree. Tall trees with ponderous trunks, the bark of which peels off annually, leaving the surface smooth and bare. American plane tree has less deeply divided and indented leaves than the plane tree of Western Asia and Cashmere, and no membranous bracts along the female flowers. On the banks of the Ohio and the Mississippi there are trees 10 to 16 feet in diameter. Called in the United States also, buttonwood and water beech, and sycamore, and in Canada, cotton tree.

Planet, a heavenly body which, to old-time observers, seemed to wander about aimlessly in the sky. Subsequently it was discovered that the seemingly erratic bodies were as regular in their movements as the others, revolving, like the earth, around the sun. Shining only with reflected light, they gleam with a steady radiance in place of twinkling like the fixed stars.

Planetoids, the name given to a great group of minute planets placed together between Mars and Jupiter. On Jan. 1, 1801, a planetary body, afterward called Ceres, was found in the part of the solar system theoretically indicated; it was far more diminutive in size than had been expected. Within the next six years three more asteroids (Pallas, Juno, and Vesta) were found in proximity to Ceres, and up to November, 1898, 426 of these small planets had been discovered, 70 by Americans. All are of minute size, and some angular in place of spherical.

Plank, Fort, or **Fort Blank,** a Revolutionary fort in Montgomery co., N. Y., 2 miles N. W. of Fort Plain.

Plantagenets, the surname of a line of English kings of French origin on the paternal side — Henry II. of England, the first of the line, ascended the English throne in 1154, and his descendants reigned during 331 years, the last monarch of the line being Richard III., who fell at the battle of Bosworth, in 1485. In the 14th century the line became divided into two great rival factions, that of York and of Lancaster, known as the parties of the Red and White Rose.

Plantain, a small tree closely akin to the banana from which it differs in not having purple spots on its stem. The fruit also is larger and more angular. It is very delicious and is thoroughly wholesome. The name plantain is also applied to a common weed, the seeds of which are used as food for birds.

Plantain Eaters, a family of Pie-like birds, of African distribution, arboreal habits, and vegetarian diet.

Plantation, a term formerly used to designate a colony. The term was latterly applied to an estate in the Southern States, the West Indies, etc., cultivated chiefly by negroes. The term planter is applied to the owner of a plantation.

Plantin, Christophe, a French printer; born in St. Avertin, near Tours, in 1514, and settled as a bookbinder at Antwerp in 1549; some six years later he began to print. The most noted of all his publications is the "Biblia Polyglotta." Plantain's editions of the Bible in Latin, Hebrew, and Dutch, and editions of the Greek and Latin classics, are scarcely less celebrated. He set up printing establishments in Leyden and Paris, and these, with that in Antwerp, were carried on by the husbands of his daughters. His office in Antwerp remained in the possession of the descendants of John Moretus, his son-in-law, till it was bought by the city in 1876 for $240,000; out of it was created the "Musee Plantin." Plantin died in Antwerp, July 1, 1589.

Plaster, calcined gypsum or sulphate of lime, used, when mixed with water, for finishing walls, molds, etc.

Plaster of Paris, the name given to gypsum when ground and used for taking casts, etc.

Plata, Rio de la, River of Silver; a body of water which extends for more than 200 miles between the Argentine Republic and Uruguay, and is not, strictly speaking, a river, but rather an estuary, formed by the junction of the great rivers Parana and Uruguay. It flows into the Atlantic between Cape St. Antonio and Cape St. Mary, and has here a width of 170 miles. It was discovered in 1515 by Juan Diaz de Solis, and called Dio de Solis; it owes its present name to the famous navigator Cabot.

Plating, the act, art, or process of covering articles with a thin coating of metal; especially the art of covering baser metals with a thin coating of gold or silver.

Platinum, a tetrad metallic element discovered first in the United States; and still largely produced there; also found in the Ural chain, and in copper ore from the Alps. Pure forged platinum takes a high luster, is nearly as white as silver, and very ductile and malleable. It resists the strongest heat of the forge fire, but can be fused by the electric current; is the heaviest known substance excepting osmium and iridium, is unalterable in the air, dissolves slowly in nitromuriatic acid, but is not attacked by any single acid.

Plato, a Greek philosopher; born in Athens or in Ægina, in May, 429 B. C., the year in which Pericles died. He was a disciple of Socrates, and after the death of that philosopher Plato himself became a teacher in the plane tree grove of the Academia. He had a great number of disciples, many of whom became eminent teachers. Among them was Aristotle, distinguished as the "Mind of the School," and perhaps Demosthenes. Women are said to have attended. In his 40th year, Plato visited Sicily, but he offended the tyrant Dionysius by the political opinions he uttered, and only escaped death through the influence of his friend, Dion. Two later visits to the court of the younger Dionysius were the only interruptions to his calm life as a teacher and writer at Athens. He died in the act of writing, it is said, in May, 347 B. C.

Platoff, Matvei Ivanovich, Count, a Russian general; born in Azov, Russia, Aug. 17, 1757. He served in the Turkish campaign of 1770–1771; he took part in the campaigns against the French, 1805–1807. He was enthusiastically welcomed, and presented with a sword of honor on the occasion of his visit to London in company with Blucher. After the war he retired to his own country, and died near Tcherkask, Jan. 15, 1818.

Platonic Love, an affection subsisting between two persons of different sex, which is presumed to be unaccompanied by any sensuous emotions, and to be based on moral or intellectual affinities. The expression has originated in the view of Plato, who held that the common sexual love of the race, harassed and afflicted with fleshly longings, is only a subordinate form of that perfect and ideal love of truth which the soul should cultivate.

Platt, Thomas Collier, an American legislator; born in Owego, N. Y., July 15, 1833; was a member of the class of 1853 of Yale College, but was compelled to give up on account of ill health; received the honorary degree of M. A. from that college in 1876; entered mercantile life soon after leaving school; was county clerk of the county of Tioga in 1859, 1860 and 1861; was elected to the 43d and 44th Congresses; was elected United States Senator Jan. 18, 1881, and resigned that office May 16 of the same year, with Roscoe Conkling, both Senators being offended because President Garfield made New York appointments without consulting them; was chosen secretary and director of the United States Express Co. in 1879, and in 1880 was elected president of the company; was member and president of the board of quarantine commissioners of New York from 1880 till 1888; was delegate to the National Republican convention of 1876, 1880, 1884, 1888, 1892 and 1896; was president of the Southern Central railroad; was a member of the National Republican committee; and was elected United States Senator in 1896, and re-elected in 1903. Senator Platt has been married twice. His first wife died Feb. 13, 1901, and he was married to Mrs. Lillian T. Janeway, of Washington, widow of Dr. Theodore Janeway, of New York, Oct. 11, 1903,

Platte, a river in the United States, which rises in the Rocky Mountains

by two branches, called respectively the North and South Forks of the Platte. The united stream falls into the Missouri after a course of about 1,600 miles.

Playfair, Sir Lyon, a British scientist; son of Dr. G. Playfair, inspector-general of hospitals in Bengal; born in Meerut, Bengal, May 21, 1819. His able reports on the sanitary condition of the large towns of Great Britain brought him prominently before the public. He held several appointments under Liberal governments, including that of postmaster-general 1873–1874. He died May 29, 1898.

Pleasonton, Alfred, an American military officer; born in Washington, D. C., June 7, 1824; he was graduated at the United States Military Academy and commissioned a brevet 2nd lieutenant in 1844; served through the Mexican War, the Sioux campaign in 1856, and the Civil War; in 1864 drove the Confederates under General Price from Missouri. He was promoted Major-General of volunteers in 1863; promoted major, U. S. A., in 1888; and was retired Oct. 23, following. He died in Washington, D. C., Feb. 17, 1897.

Plebeians, or **Plebs,** in ancient Rome, one of the great orders of the Roman people. The whole government of the state, with the enjoyment of all its offices, belonged to the patricians, with whom the plebeians could not even intermarry. The civil history of Rome is composed of the struggles of the plebeians to claim a place in the commonwealth, to which they were entitled. It met with success when (286 B. C.) the Lex Hortensia gave the enactments passed at the plebeian assemblies, the force of law.

Pleiades, or **Pleiads,** a group of stars in the constellation Taurus, the Bull. The stars are so close together that it is difficult to say how many are seen by the naked eye.

Plenipotentiary, one who is invested with full and absolute powers to transact any business; specifically, an ambassador or envoy accredited to a foreign court, with full powers to negotiate a treaty or to transact other business.

Plesiosaurus, the typical group of the order Plesiosauria, extinct amphibian animals. Its organization would fit it for swimming on or near the surface, and the length and flexibility of its neck would be eminently serviceable in capturing its prey.

Pleura, in anatomy, plural, serous membranes forming two shut sacs, each possessed of a visceral and a parietal portion. The former covers the lungs, and the latter the ribs, the intercostal spaces, etc.

Pleurisy, inflammation of the pleura, going on to exudation, fluid effusion, absorption, and adhesion.

Pleuro-pneumonia, pneumonia with bronchitis, the former constituting the chief disease.

Plimsoll, Samuel, "the sailor's friend," an English legislator; born in Bristol, England, Feb. 10, 1824. In 1854 he started business on his own account in the coal trade in London. Shortly afterward he began to interest himself in the sailors of the mercantile marine, and the dangers to which they were exposed. He accumulated facts proving that the gravest evils resulted from the wilful employment of unseaworthy ships, from overloading them, and undermanning them, from bad stowage, and from over insurance; unscrupulous owners insured rotten or "coffin" ships at a value greatly exceeding their real value, and sent them to sea. Mr. Plimsoll entered Parliament in 1868, succeeded in getting passed the Merchant Shipping Act in 1876. By this act the Board of Trade was empowered to detain any vessel deemed unsafe, and every owner was ordered to mark on the sides of his ships the line down to which the vessel might be loaded, in salt water. In 1890 the fixing of the load line was taken out of the owner's discretion and made a duty of the Board of Trade. Mr. Plimsoll retired from parliamentary life in 1880. Died June 3, 1898.

Pliny, the Elder (Caius Plinius Secundus), one of the most celebrated writers of ancient Rome; born in Verona or Como A. D. 23, served in the army of Germany, afterward became an advocate, and was ultimately procurator in Spain. Being at Misenum with a fleet, which he commanded, on the 24th of August, A. D., 79, his sister desired him to observe a remarkable cloud that had just appeared. Pliny

discovered that it proceeded from Mount Vesuvius, ordered his galleys to sea, to assist the inhabitants on the coast, while he himself steered as near as possible to the foot of the mountain. Pliny and his companions landed at Stabiæ, but were obliged to leave the town for the fields, where the danger was equally great, from the shower of fire which fell on them. In this state they made their way to the shore, but Pliny fell down dead, suffocated probably by the noxious vapors. The eruption which caused his death was that in which the cities of Herculaneum and Pompeii were destroyed. His name and fame are preserved by his great work entitled "Natural History," in 37 books, one of the most precious monuments of antiquity extant. Its contents are immensely varied in character. It is a laborious compilation, from almost innumerable sources, of facts, observations, and statements on almost all branches of natural science, on the fine arts, on inventions, and other subjects. It has been translated into most European languages.

Pliny, the Younger (Caius Plinius Cæcilius Secundus, nephew of the preceding; born in Como A. D. 62. In his 18th year he began to plead in the forum; he went as military tribune to Syria. He was promoted to the consular dignity by Trajan. He was afterward made proconsul of Bithynia, from whence he wrote to Trajan his well-known account of the Christians, and their manner of worship. The "Epistles of Pliny" are agreeably written, and very instructive, and have been translated into English. He died after 112.

Pliocene, or **Pleiocene,** the epithet applied to the most modern of the three periods into which Lyell divided the Tertiary. Its distinguished character is that the larger part of the fossil shells are of recent species, divided into the Older and the Newer Pliocene. In the Older, the extinct species of shells form a large minority of the whole; in the Newer, the shells are almost all of living species.

Plover, the common name of several wading birds; specifically, the golden, yellow, or green plover. Plovers are gregarious in habit, and have a wide geographical range.

Plum, the fruit of the common plum. It is a native of the Caucasus and Asia Minor, whence it was introduced into Europe at a very early period, and later into America. As it is now in gardens, it is a tree of 15 or 20 feet high.

Plumed Knight, a name given to James G. Blaine, and originating in a speech made by Col. Robert G. Ingersoll, in nominating Mr. Blaine for the presidency.

Plush, a shaggy pile cloth of various materials. An unshorn velvet of cotton, silk, or mixed fiber, sometimes of a silk nap and cotton back. It has two warps, one of which is brought to the surface to make the nap.

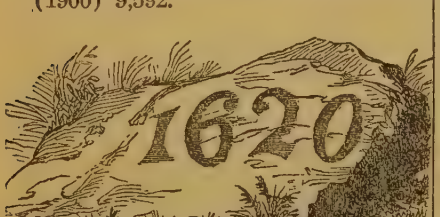
Plutarch, a Greek biographer and moralist, a native of Chæronea, in Bœotia. In A. D. 66 he was a pupil of the philosopher Ammonius at Delphi. He visited Italy, and spent some time at Rome, lecturing there on philosophy as early as the reign of Domitian; but his name is not mentioned by any of the eminent Roman writers, his contemporaries. He returned to his native town, where he held various magistracies, and was appointed priest of Apollo. He was still living in 120, but the time of his death is not known. His great work is entitled "Parallel Lives," and consists of biographies of 46 eminent Greeks and Romans, arranged in pairs, each pair accompanied by a comparison of characters.

Pluto, in mythology, the son of Saturn and Ops, inherited his father's kingdom with his brothers, Jupiter and Neptune. He received as his share the infernal regions. All the goddesses refused to marry him; but, on seeing Proserpine, the daughter of Ceres, he became enamored of her, and carried her away. Black victims, and particularly a bull, were the only sacrifices offered to him. The dog Cerberus watched at his feet, the harpies hovered around him, Proserpine sat on his left, and the Parcæ occupied his right hand.

Plutus, in Greek mythology, the god of riches. He was represented as blind, because he distributed riches indiscriminately; he was lame, because he came slowly and gradually; and he

had wings, to intimate that he flew away with more velocity than he approached mankind.

Plymouth, a town and county-seat of Plymouth co., Mass.; on Plymouth Bay, 37 miles S. E. of Boston. Plymouth is of importance as the spot where the Pilgrim Fathers landed on Dec. 21, 1620. A portion of the rock on which they first stepped has been placed in front of Pilgrim Hall, in which are preserved old books, paintings, pictures, and other valuable relics. The rock itself is in Water Street, and is covered by a handsome granite canopy. Plymouth also has the National monument, 81 feet high, erected to the Pilgrims at a cost of $200,000, and dedicated in 1889. Pop. (1900) 9,592.



PLYMOUTH ROCK.

Plymouth, a town and county-seat of Washington co., N. C.; on a small creek, a few miles S. of the Roanoke river, where it enters Albemarle Sound; 105 miles E. of Raleigh. It fell into the hands of the Federal troops early in 1862, and was taken in April, 1864, by the Confederates with the aid of the iron-clad ram "Albemarle." The "Albemarle" was blown up with a torpedo by Lieut. W. B. Cushing on Oct. 27, and on Oct. 31 Plymouth was reoccupied by the Federal troops without resistance.

Plymouth, a seaport, municipal and parliamentary borough of England, in Devonshire, at the head of Plymouth Sound, between the estuaries of the Plym and Tamar. Its chief importance lies in its position as a naval station. To secure safe anchorage in the sound a stupendous breakwater has been constructed at a cost of about $10,000,000. The Western Harbor, or the mouth of the Tamar, is devoted to the navy, and here are the dockyard, and Keyham steam yard. The mercantile marine is accommodated in the Eastern Harbor, the Catwater or estuary of the Plym, and in Sutton Pool, and the Great Western Docks in Mill Bay. Plymouth is supplied with water from Dartmoor by a channel. Pop. (1901) 107,509.

Plymouth Brethren, a body which arose almost simultaneously in Dublin and Plymouth, about 1830, and, as they called themselves "The Brethren," outsiders came to know them as "Plymouth Brethren" from the town where they had fixed their headquarters. Their communities are of what is known as the Evangelical Calvinistic type, and many of them maintain that only among themselves is true Christianity to be found. They baptize all adults, whether previously baptized or not, and observe the Sacrament of the Lord's Supper weekly.

Pneumatic Dispatch, propulsion by means of compressed air or by forming a vacuum. Propulsion by compressed air has of recent years been successfully applied to a variety of practical uses. Parcels are thus conveyed, and internal communication in warehouses, hotels, etc., is carried on by its means. New York, Philadelphia, and other American cities use a pneumatic mail dispatching system. The pneumatic dispatch plant connected with the Philadelphia postoffice is in many respects the most complete plant of the sort in the world. It has been in use since Feb. 17, 1893. In the annual report of the Postmaster-General to Congress for 1901, he advocated the increased use of the pneumatic dispatch service throughout the United States.

Pneumatic Gun, a gun operated by compressed air. The firing is done by pulling a lanyard in the usual manner.

Pneumatics, the science which treats of the mechanical properties of air and other gases, investigating their weight, pressure, elasticity, condensation, etc. Air being a vehicle of sound, pneumatics includes also the science of acoustics.

Pneumonia, inflammation of the lung, usually caused by exposure to

cold or wet, a cold draught or chill after being overheated, injury to the chest, irritation, or as a secondary affection in smallpox, typhoid or puerperal fever, and other low wasting diseases.

Po, the largest river of Italy, rises on Monte Viso, one of the Cottian Alps, at an altitude of 6,405 feet, close to the French frontier. It has an entire length of 360 miles, and drains an area of nearly 28,900 square miles. Below Piacenza its stream has from ante-Roman days been artificially embanked along great stretches with double lines of embankments on each side.

Poaching, the trespassing on another's property for the purpose of killing or stealing game or fish. While nearly every State, if not every one, has game laws, they are enacted in the public interest, and bear no similarity to the game laws of Great Britain, which are feudal in their character, and intended to reserve for the wealthy alone the recreations of hunting and fishing. Poaching in the English sense is unknown in America. In England when a person's land adjoins a stream where there is no ebb and flow that person is assumed to have an exclusive right to fish in the stream as far as his land extends, and up to the middle of the stream; and so also when a person's land incloses a pond, the fish in that pond belong to him. Where several properties are contiguous to the same lake the right of fishing in that lake belongs to the proprietors, in proportion to the value of their respective titles. Exclusive right of fishing in a public river, that is, one in which there is ebb and flow up to the tidal limit, or a portion of the sea, is held by some proprietors by virtue of royal franchises granted prior to the Magna Charta.

Pocahontas, daughter of Powhatan, a powerful Indian chief of Virginia; born about 1595. She displayed a friendliness toward the British colonists, first at 12 years of age, in saving the life of Capt. John Smith, who had been captured and condemned to death by her father, and on several occasions making known to the English their danger when about to be attacked. In 1612, while on a visit to a neighboring tribe, she was seized, and held as a hostage by the English, as a safeguard against the hostility of her tribe. While on shipboard she became acquainted with, and married John Rolfe, an Englishman, who took her to England, where, in 1616, she was presented at court. She had one son, from whom numerous wealthy families of Virginia claim descent. She died in England, in 1617, while preparing to return to America.

Pochard or **Poachard,** a duck inhabiting the Arctic regions. Its cry has been compared to a serpent's hiss. Its flight is more rapid than that of the wild duck.

Pococke, Richard, an English traveler; born in Southampton, England, in 1704, and educated there and at Corpus Christi College, Oxford. He was the pioneer of Alpine travel. He died very suddenly in Charleville, near Tullamore, Sept. 15, 1765.

Podargus, a genus of Australasian nocturnal birds of the goatsucker family. By day they are drowsy.

Podophyllum, the May apple, called also the wild lemon. The fruit is eatable.

Poe, Edgar Allan, an American poet and story-writer; born in Boston, Jan. 19, 1809. Left an orphan early, he was adopted by John Allan, of Richmond, Va., and at the age of 19 left this home and published his first volume of verse at Boston. He was a cadet at the United States Military Academy, 1830–1831; and subsequently embarked on a literary career. He was one of the most remarkable characters in literature, gifted with genius, but apparently without any genuine sense of moral obligation to friends and benefactors. His place among American poets, however, will always be high. Poe died in Baltimore, Md., Oct. 7, 1849.

Poet Laureate, an office in the household of the sovereigns of Great Britain. The first appointment of a poet laureate dates from the reign of Edward IV., the first patent being granted in 1630. It was formerly the duty of the poet laureate to write an ode on the birthday of the monarch, but this custom has been discontinued since the reign of George III. Among those who have held this office are

Dryden, Southey, Wordsworth, and Tennyson. Alfred Austin is the present incumbent.

Poetry, that one of the fine arts which has for its object the creation of intellectual pleasure by the use of imaginative and passionate language, which is generally, though not necessarily, formed in regular measure; the art of producing illusions of the imagination by means of language. Also poetical, imaginative, or passionate language or compositions, whether expressed rhythmically or in prose. Thus, many parts of the prose translations of the Bible are genuine poetry.

Point, in geometry, a quantity which has no parts, or which is indivisible, or which has position without magnitude. Points may be regarded as the ends or extremities of lines.

Poison. Any agent which, when introduced into the animal organism, is capable of producing a morbid or deadly effect upon it. Professor Christison divides poisons into three great classes: Irritants, narcotics, and narcotico-acrids or narcotico-irritants. A fourth class is sometimes added, septics, consisting of animal poisons, such as the bites of rabid animals and venomous snakes, the stings of insects, etc.

Poisoners. The use of deadly drugs has always been a favorite method with unscrupulous persons who desired to rid themselves of rivals or enemies. The Egyptians were familiar with many poisons. In the early history of India poisons were used for suicides, robbery and revenge, and at the present time the most subtle and untraceable poisons are the product of that country. Socrates, the Greek philosopher, was condemned to drink the poisonous juice of the hemlock as a judicial punishment. In the period between the 14th and 17th centuries there was a class of professional poisoners. These flourished in Venice in the 15th century and were employed by the Council of Ten to "remove persons obnoxious to the government." The Borgia family were celebrated for the number of murders they committed in this way. Secret poisoning became so alarmingly prevalent by 1648, that an investigation was ordered by Pope Alexander VII. Recent American criminal records furnish some noted cases of poisoning by use of the mail.

Poison Ivy, a climbing plant which closely resembles the woodbine and which is very irritating to sensitive skins.

Poison Nut, a name for Strychnos nux-vomica, an evergreen tree, the seeds of which yield strychnine.

Poisson, Simeon-Denis, a French geometer; born in Pithiviers, department of Loiret, June 21, 1781. He is fairly considered one of the chief founders of the science of mathematical physics. He died April 25, 1840.

Poker, a game played with cards.

Pokeweed, a North American branching herbaceous plant, which is naturalized in some parts of Europe and Asia; the young shoots are sometimes eaten in the United States as asparagus.

Poland, once a large and important kingdom situated in the N. E. of Europe; now expunged from all maps as an independent country. It was the most level country in Europe, the Carpathian Mountains on the S. and W. being the only mountain range of any height in the kingdom. The rivers of chief note are the Vistula, Bug, Niemen, Dwina, Dnieper, and Dniester, either flowing into the Baltic or the Euxine. The principal mineral products are iron, lead, gold, and silver, with salt, which last, from the abundance of the yield, and the size and richness of the mines, was considered as the natural wealth of the country. The climate is extremely cold, humid, and unhealthy; the soil generally fertile. Cattle and wheat are still the chief agricultural products. Poland was anciently divided into 12 provinces, each of which was governed by a chief, called a "Palatine." The Poles were originally a tribe of Vandals, whose history is quite unknown before the 6th century. From the 13th century, the Poles became the most warlike nation in Europe, and from the time when the Turks first crossed the Hellespont and settled in Greece, Poland was denominated the shield of Eastern Europe. In 1674, John Sobieski was advanced to the kingly dignity, and under him the Polish arms acquired a glory that eclipsed all other nations of that age. Sobieski formed a league with the Emperor Leopold, and when that monarch had been defeated, and his capital on the point of

falling into the hands of the Turks, Sobieski advanced to Vienna, raised the siege, and, defeating the invaders, drove them back in rout to Constantinople. The war of succession that succeeded, between Charles XII. of Sweden and Frederic Augustus of Saxony, almost ruined the kingdom and hastened its fatal end. Count Poniatowski who, in 1764, was elected to the throne by the name of Stanislaus Augustus, was the last King of Poland. Under this unfortunate sovereign, the country became the theater of a long and devastating war; and Poland was divided between Catherine of Russia, Joseph II., Emperor of Germany, and Frederic of Prussia. This partition of an ancient nation was perpetrated in 1772. In 1795, a further dismemberment was effected between the three great powers, and the whole of Poland absorbed, except the ancient city of Cracow, with a few miles of adjacent country, which was left to point to future ages where the once warlike nation of Poland stood on the physical map of Europe. Of the three spoilers of Poland, Russia possesses the largest share of territory and population. Frequent insurrections have occurred. In 1864, Poland was deprived of its administrative independence, and in 1868 was incorporated absolutely with Russia. There are two parties, the Nationalists and the Socialists, both opposed to the Russian government. Pop. 9,455,943.

Poland, John Scroggs, an American military officer; born in Princeton, Ind., Oct. 14, 1836; was graduated at the United States Military Academy and appointed a 2d lieutenant in 1861; served through the Civil War; was assistant Professor of Geography, History, Ethics and Drawing at the United States Military Academy in 1865–1869; and was chief of the Department of Law at the United States Infantry and Cavalry School, Fort Leavenworth, Kan., in 1881–1886. At the beginning of the war with Spain (1898) he was commissioned a Brigadier-General of volunteers and commanded the 2d division, 1st Army Corps, stationed at Chickamauga Park, Ga. He died in Asheville, N. C., Aug. 8, 1898.

Polar Bear, the largest individual of the family Ursidæ, and one of the best known. It is found over the whole of Greenland, but its numbers are decreasing, as it is regularly hunted for the sake of its skin. It is quite white when young, changing to a creamy tint in maturity.

Polar Circles, two imaginary circles of the earth parallel to the equator.

Polarization, the act of polarizing or of giving polarity to, the state of being polarized. In galvanism, the production of a secondary current in a galvanic battery contrary to the principal one, owing to the gradual chemical change in the elements of the battery. This change weakens, or may even destroy, the original current.

In optics, a state into which the ethereal undulations which cause the sensation of light are brought under certain conditions. These undulations are perpendicular to the line of transmission of the wave, as in a stretched cord, but in a ray of common light, appear to take place successively in all directions, the vibrations successively passing through rectilinear, elliptical, and circular phases with inconceivable rapidity. If the vibrations become, or are rendered, stable in any one form of orbit, the light is in the condition known as polarized.

Pole, in astronomy, one of the two points in which the axis of the earth is supposed to meet the sphere of the heavens.

Pole, Reginald, Cardinal, a British statesman and Archbishop of Canterbury in the reign of Queen Mary, descended from the blood royal of England; born in Stourton Castle, in Staffordshire, in 1500. He was educated at Sheen Monastery and Magdalen College, Oxford; and after obtaining preferment in the Church, went to Italy, where he long resided. On his return to England he opposed the divorce of Henry VIII. from Catherine of Aragon in such earnest terms, that the king drove him from his presence, and never saw him more. He again left England, was made a cardinal in December, 1536, and had the offer of the popedom on the death of Paul III. When Mary ascended the throne, Pole returned to England as legate, in which capacity he absolved the Parliament from their sin of heresy, and reconciled the nation to the

Holy See. The very day after the burning of Cranmer, the cardinal was consecrated Archbishop of Canterbury. He survived the queen but one day, and died Nov. 18, 1558.

Polecat, one of the Mustelinæ, akin to the marten, but with a broader head, a blunter snout, and a much shorter tail. It has a shorter neck and a stouter body than the weasel. Two glands near the root of the tail emit a highly offensive smell. It makes immense havoc in poultry yards, rabbit warrens, and among hares and partridges, killing everything which it can overpower.

POLECAT.

Pole Star, Polaris, a bright star at the tip of the tail of Ursa Minor, and in a line with the pointers Merak and Dubhe, the two stars constituting the front of the plowlike figure in Ursa Major. The pole star is really a double star of yellow hue, but while the larger or visible one is between the second and third magnitude, its companion is only of the ninth, and therefore a telescopic star. There is no corresponding star in the Southern Hemisphere.

Police, a system of judicial and executive administration of a country, especially concerned with the maintenance of the quiet and good order of society. In a more limited sense, the administration of the laws, by-laws, and regulations of a city. The designation, also, of a body of men, not military, appointed to enforce state and municipal laws, and preserve the peace.

Political Economy, the science which investigates the nature of wealth and the laws of its production and distribution, including the operation of causes by which the condition of mankind in respect to this object of human desire, is made prosperous or the reverse. Inquiries on these points must have existed from the earliest times in every nation, but political economy as a science is dated from recent times.

Political Offenses, those offenses considered injurious to the safety of the state. In modern times the crimes considered political offenses have varied at different periods and in different states. In the United States and in most of the countries of Europe, extradition treaties do not include giving up political offenders.

Political Parties, division of people in a State marked off by the particular views they hold as to the public policy to be pursued in the best interests of the people at large. In the United States the chief political parties are the Democrats and the Republicans.

Politics, the science which treats of the distribution of power in a country. Popularly, the political sentiments of an individual, his procedure in promoting the interests of his party.

Polk, James Knox, an American statesman, 11th President of the United States, born in Mecklenburg co., N. C., Nov. 2, 1795. His ancestors, who bore the name Pollock, emigrated from the W. of Ireland early in the 18th century. He was educated at the University of Nashville, Tenn., to which State his father had removed in 1806, and was admitted to the bar in 1820. In 1823 he was sent to the Tennessee Legislature, and in 1824 to Congress, to which body he was reëlected for seven successive terms, serving till 1839. He was made chairman of the Committee of Ways and Means in 1833, and twice elected Speaker of the House — 1835–1837. In Congress he was consistently a Democrat, supporting unwaveringly the administration of Jackson and Van Buren, and opposing that of Adams. In 1839 he was elected governor of Tennessee, and in 1844 unexpectedly nominated as a compromise candidate of the National Democratic Convention for the presidency, and elected over Henry Clay, the Whig candidate. His administration was eventful, and in some respects

brilliant. Texas was annexed, and the Mexican War fought, which, with territorial purchases, added the great territory now comprising Texas, California, New Mexico, Utah, Nevada, and the W. part of Colorado to the domain of the United States. The Oregon boundary forming one of the issues on which he was elected, was settled by a compromise offered by England. He was a man of eminent administrative abilities, of consistent principles, and pure and upright private character. At the close of his single term Polk declined to stand for renomination, and retired to private life in Nashville, Tenn., where he died June 15, 1849.

Polk, Leonidas, an American military officer; born in Raleigh, N. C., April 10, 1806; was a cousin of President Polk, and grandson of Col. Thomas Polk, an officer of the Revolution. Graduating at the United States Military Academy in 1827, he received a commission in the artillery, but was induced to study for the ministry, and in 1830 received deacon's, and in 1831 priest's orders in the Episcopal Church. In 1838 he was consecrated Bishop of Arkansas and Indian Territory, with charge of the dioceses of Alabama, Mississippi, and Louisiana; in 1841 he resigned all these except the bishopric of Louisiana, which he retained till his death. Soon after the outbreak of the Civil War he was offered a major-generalship by Jefferson Davis, and accepted it; was promoted to Lieutenant-General. He was killed while reconnoitering on Pine Mountain, June 14, 1864, by a cannon shot fired by some Northern officers who wished to give the bishop's party a fright.

Polka, a well known dance, the music to which is in 2-4 time, with the third quaver accented.

Pollard, Edward Albert, an American journalist and author; born in Virginia, Feb. 27, 1828. As editor of the Richmond "Examiner" during the Civil War, he was an earnest advocate of the Confederate cause, but an active opponent of Jefferson Davis. He died in Lynchburg, Va., Dec. 12, 1872.

Pollard, Josephine, an American writer of juvenile literature; born in New York city in 1843. She died there Aug. 15, 1892.

Pollen, in botany, the pulverulent or other substance which fills the cells of the anther. It consists of minute granules varying in size and inclosing a fluid containing molecular matter. In entomology, pollen collected from plants and carried on the outer surface of the tibiæ of bees. Mixed with honey, it becomes the food of the larvæ.

Pollock, Sir Frederick, third baronet of the name; born Dec. 10, 1845. He was called to the bar and became Corpus Professor of Jurisprudence at Oxford, and Professor of Common Law. His younger brother, Walter Herries Pollock, born Feb. 21, 1850, was called to the bar and 10 years later became editor of the "Saturday Review."

Pollock, Sir George, field-marshal; born Westminster June 4, 1786; entered the army of the East India Company as lieutenant of artillery in 1803. In 1838 he reached the rank of major-general. After the massacre of General Elphinstone and his forces in the passes of Afghanistan the Indian government decided to send a force to the relief of Sir Robert Sale. The command of the relieving force was given to General Pollock. In April, 1842, he forced the formidable Khyber Pass, and reached Sir Robert Sale; he defeated the Afghan chief at Tezeen, and destroyed the bazaar in Kabul, and he recovered 135 British prisoners. He returned to England in 1846, and was created a field-marshal in 1870. He died Oct. 6, 1872.

Poll Tax, a tax levied per head. In the United States a poll tax (varying from 25 cents to $3 annually) is levied in most of the States, in addition to the taxes on property.

Pollux, a celebrated hero of the Grecian mythology, and twin brother of Castor, after whose death he implored Jupiter to render him immortal. His prayer could not be entirely granted, but Jupiter divided immortality between the brothers, each living and dying alternately. In astronomy, one of the twins forming the constellation Gemini. Also the name of a star of the second magnitude in the same constellation.

Polo, an equestrian game, which may be shortly described as hockey on

horseback. It is of Oriental origin and of high antiquity; it has been claimed that it can be traced back to 600 B. C. Since 1876 many polo clubs have been started in the United States.

Polo, Marco, a Venetian traveler of the 13th century, the son of a merchant, who, with his brother, had penetrated to the court of Kublai, the great khan of the Tartars. This prince, being highly entertained with their account of Europe, made them his ambassadors to the Pope; on which they traveled back to Rome, and, with two missionaries, once more visited Tartary, accompanied by the young Marco who became a great favorite with the khan. Having acquired the different dialects of Tartary, he was employed on various embassies; and after a residence of 17 years, all the three Venetians returned to their own country in 1295, with immense wealth. Marco afterward served his country at sea against the Genoese, and, being taken prisoner, remained many years in confinement, the tedium of which he beguiled by composing the history of his "Travels." Marco Polo relates many things which appear incredible, but the general truthfulness of his narrative has been established by succeeding travelers.

Polonaise, a Polish national dance, which has been imitated, but with much variation, by other nations.

Polyandry, the marriage of one woman to several men at once. There are several forms of it, each an advance on its predecessor: (1) One wife has several unrelated husbands, and each of the husbands other unrelated wives; (2) the unrelated husbands have but one wife; (3) the husbands are related; (4) the husbands are brothers. The custom is still widely spread in the East.

Polyanthus, a beautiful and favorite variety of the common primrose, growing in woods and copses in a moist clayey soil. The plants are very hardy, and require to be transplanted every two years.

Polybius, a Greek historian; born in Megalopolis, Greece, probably about 204 B. C. His great work is a general history of the affairs of Greece and Rome from 220 B. C. to 146 B. C. Five only of its 40 books are now extant, with some fragments of the rest, but these are among the most important literary remains of antiquity. He wrote several other works, but they have perished. Died at the age of 82.

Polycarp, St., one of the apostolical fathers of the Church, and a Christian martyr, who, according to tradition, was a disciple of the Apostle John, and by him appointed Bishop of Smyrna; suffered martyrdom A. D. 106.

Polycrates, a ruler of the island of Samos from about 536 to 522 B. C. He conquered several islands on the Asiatic mainland, waged war successfully against the inhabitants of Miletus and defeated their allies, the Lesbians in a great sea fight. His intimate alliance with Amasis, King of Egypt, proves the importance in which this daring island-prince was held even by great monarchs. Orœtes, the Persian satrap of Sardis, had conceived a deadly hatred against Polycrates, and, having enticed the latter to visit him at Magnesia by appealing to his cupidity, he seized and crucified him.

Polygamy, the practice or condition of having a plurality of wives or husbands at the same time. It is forbidden by law in all Christian countries, but existed among the Mormons, who revived the polygyny of ancient times. It is now said to be almost extinct in Utah.

Polyglot, a collection of versions in different languages of the same work, but is almost exclusively applied to manifold versions of the Bible.

Polygon, in geometry, a portion of a plane bounded on all sides by more than four limited straight lines.

Polygyny, the marriage by one man of several wives at the same time.

Polyhymnia, one of the Muses, daughter of Jupiter and Mnemosyne, who presided over singing and rhetoric, and was deemed the inventress of harmony.

Polynesia, a general name for a number of distinct archipelagoes of small islands scattered over the Pacific Ocean, extending from about lat. 35° N. to 35° S., and from lon. 135° E. to 100° W., the Philippines, New Guinea, Australia, and New Zealand being excluded. The islands are distributed into numerous groups, having a general direction from N. W. to S.

E. The islands may be divided into two chief classes, volcanic and coral islands. Some of the former rise to a great height, the highest peak in the Pacific, Mauna Loa, in Hawaii, reaching 13,600 feet. The elevations of the coral formation groups do not exceed 500 feet.

Polynesia has a comparatively moderate temperature, and the climate is delightful and salubrious. The predominating race, occupying the central and E. portion of Polynesia, is of Malay origin, with oval faces, wide nostrils, and large ears. The hair and complexion vary, but the latter is often a light brown. Their language is split up into numerous dialects. The other leading race is of negroid or Papuan origin, with negro-like features and crisp mop-like hair. They are confined to Western Polynesia, and speak a different language, with numerous distinct dialects. Christianity has been introduced into a great many of the islands, and a large number of them are under the control of one or other of the European powers. The Ladrones were discovered by Magellan in 1521, the Marquesas by Mandana in 1595, but it was not till 1767 that Wallis, and subsequently Cook, explored and described the chief islands. Since the natives came in contact with the whites their numbers have greatly decreased.

Polyp, a name usually applied to an animal like the fresh-water hydra or like the sea anemone, having a tubular body and a wreath of many tentacles around the mouth.

Polyphemus, in mythology, the king of all the Cyclops in Sicily, and son of Neptune and Thoosa. He is represented as a monster of immense strength, and with one eye in the middle of the forehead. He fed on human flesh, and kept his flocks on the coasts of Sicily.

Polyphone, a character or vocal sign representing more than one sound.

Polytechnic College, a coeducational institution in Fort Worth, Tex.; founded in 1891 under the auspices of the Methodist Episcopal Church.

Polytechnic Institute, an educational non-sectarian institute in Brooklyn, N. Y.; founded in 1854.

Polytechnic School, an educational establishment in which instruction is given in many arts and sciences, more especially with reference to their practical application.

Polytheism, the worship of many gods. It is not necessarily the same as idolatry, for gods may be adored without of any image of them being made.

Pombal, Sebastian Joseph. de Carvalho e Mello, Marquis of, a Portuguese statesman; born May 13, 1699, at the castle of Soure, near Coimbra. In 1739 he was appointed ambassador in London, and six years later was sent to Vienna in a similar capacity. Just before Joseph I. ascended the throne of Portugal (1750), Pombal was appointed secretary for foreign affairs. When the great earthquake happened at Lisbon in 1755 Pombal displayed great calmness and fertile resource, so that next year the king made him prime minister. He crushed a revolt instigated by the great nobles and the Jesuits, and in 1759 banished the latter from the kingdom. The tyranny of the Inquisition was broken. Agriculture, commerce, and the finances were all improved. In 1758 he had been made Count of Oeyras, and in 1770 he was created Marquis of Pombal. On the accession of Joseph's daughter, Maria I. (in 1777), Pombal was deprived of his offices and banished from court. He died in his castle of Pombal, May 8, 1782. The cruelty shown in the punishment of the conspirators against King Joseph is a lasting blot on his memory.

Pomegranate, a dense, spiny shrub, 15 to 25 feet high, a native of W. Asia and N. Africa. It forms woods in Persia. The fruit is liked by many people.

Pomeroy, Marcus Mills, "Brick Pomeroy," an American journalist and humorous writer; born in Elmira, N. Y., Dec. 25, 1833; was a journalist of La Crosse, Wis., and later of New York city, where he founded "Brick Pomeroy's Democrat," merged in 1887 into "Pomeroy's Advanced Thought." He was successful in the West and unsuccessful in New York. He died in Brooklyn, N. Y., May 30, 1896.

Pomona, the Roman divinity of the fruit of trees. In works of art she

was generally represented with fruits in her lap, or in a basket, with a garland of fruits in her hair and a pruning knife in her right hand.

Pomona College, a coeducational institution in Claremont, Cal.; founded in 1887, under the auspices of the Congregational Church.

Pompeii, a seaport at the mouth of the Sarnus, on the Neapolitan Riviera, founded about 600 B. C. by the Oscans, and after them, occupied by the Tyrrheno-Pelasgians, and by the Samnites, till these, about 80 B. C., were dispossessed by the Romans. From that time down to its destruction, A. D. 79, it became a sort of Rome-super-Mare, frequented by the aristocracy. On Feb. 5, A. D. 63, by an earthquake in the vicinity, these buildings were all but levelled with the ground, and some years elapsed ere the fugitive citizens recovered confidence enough to reoccupy and rebuild what was once Pompeii. Revolutionized as it was for the worse, the city, however, retained much of Greek character and coloring, and had relapsed into more than its former gaiety and licentiousness, when on Aug. 23 (or, more probably on Nov. 23), 79, with a return of the shocks of earthquake, Vesuvius was seen to throw up a column of black smoke expanding like some umbrella pine of the neighborhood, till it assumed the proportions of a great swarthy cloud, dense with ashes, pumice, and red-hot stones, settling down with a force increased by the rain-torrents that intermittently fell. For three days the flight of the inhabitants continued till Pompeii was abandoned by all who could effect their escape. By the fourth day the sun had partially reappeared, and the more courageous of the citizens began to return for such of their property as they could disinter. The reigning emperor, Titus, organized relief on an imperial scale, and even undertook the clearing and rebuilding of the city. This attempt was soon abandoned, and Pompeii remained a heap of hardened mud and ashes, gradually overgrown with grass — the wall of the great theater and the outline of the amphitheater alone marking its site — till 1592, when the architect Fontana, in cutting an aque-

A POMPEIIAN HOUSE.

duct, came on some ancient buildings. Unsystematic, unscientific excavations proceeded fitfully till 1860, when the Italian kingdom took in hand the unearthing of the city. This was carried out with admirable ingenuity, care, and success, and it now attracts the pilgrim from every clime for the object lessons it is unique in affording as to the public and private life of antiquity.

House construction consists mainly of concrete or brick, and sometimes of stone blocks, especially at the corners. Two-storied, sometimes three-storied houses are numerous, though the upper floors, built of wood, have been consumed by the eruption. Stores usually occupied the ground floors of dwelling-houses, on their street aspect, let out to merchants or dealers as at the pres-

ent day, but not connected with the back part of the house. They could be separated from the street by large wooden doors, while inside they had tables covered with marble, in which earthen vessels for wine or oil were inserted. The storekeeper had sometimes a second room at the back, when he did not live on an upper floor or in another part of the town. Retail traffic must have been considerable at Pompeii, to judge from the number of those stores along the streets. Only a personal visit can convey an idea of the indoor life of the Pompeiians, with whom the absence of glass, the fewness of the openings in the street aspect of the house wall, and the protection of these with iron gratings are among the points noted by the most casual visitor. As rebuilt after 63, Pompeii shows little marble, the columns being of tufa or brick cemented by mortar. A coating of stucco was laid over wall or column and presented an ample field for ornamental painting. This must have given to Pompeii its bright, gay coloring, which, with its reds, blues, and yellows, on column and capital, on wall and partition, harmonize so well with the glowing sunlight of the South.

Pompey, Cneius Pompeius Magnus, son of Pompeius Strabo, a Roman general; born in 106 B. C. He ranged himself with the aristocratic party of the republic. On the death of Sylla, in 78 B. C., Pompey went as proconsul to Spain. With Crassus he crushed the Marian party, and in 70 B. C. Pompey and Crassus were elected consuls. He was made absolute dictator in the East, and superseded Lucullus in the command against Mithridates. The latter he completely routed in 66 B. C. In 60 B. C. he joined Cæsar and Crassus in the triumvirate, the former of whom gave him his daughter Julia in marriage. In 54 B. C. Julia died; in the year following, Crassus was slain in Asia; and the hostility between Cæsar and Pompey rapidly developed itself. Cæsar crossed the Rubicon with his troops, 49 B. C., and Pompey, accompanied by Cato, Cicero, and other nobles of Rome, fell back on Greece, where the great battle of Pharsalia decided his fate. Pompey was advised to seek an asylum in Egypt, then ruled by a sovereign he had protected, Ptolemy XII. He was received with pretended friendship, but treacherously murdered as soon as he had stepped ashore, 48 B. C., and his head being cut off it was sent to Cæsar, who turned away from it and could not restrain his tears. Cneius, son of Pompey, who endeavored to carry on the war against Cæsar, was defeated and killed at Munda, 45 B. C. Sextus, the younger brother of Cneius, continued the war for 10 years, and rendered himself formidable as a naval commander; but he was at last defeated and killed by order of Antony, 35 B. C.

Ponce de Leon, Juan, a Spanish explorer, the discoverer of Florida; born in San Servas, Spain, in 1460; was a court page, served against the Moors, and in 1502 sailed with Ovando to Hispaniola, and became governor of the E. part of the island. In 1510 he obtained the government of Porto Rico, and had conquered the whole island by 1512. He then set out on a quest for the fountain of perpetual youth, and on March 27, 1512, found Florida. He secured the appointment of adelantado of the country, and returned in 1521 to conquer his new subjects; in this, however, he failed. He retired to Cuba, and died there in July from the wound of a poisoned arrow.

Pond, Frederick Eugene, an American journalist and author; born in Marquette co., Wis., April 8, 1856.

Poniatowski, Joseph, Prince, a Polish general; born in Warsaw, Poland, in 1763, and when young entered the Austrian service, but when the Poles rose against Russia he quitted it, and joining his countrymen, fought with them under Kosciusko. On the defeat of this general, Poniatowski sought refuge in Vienna, till the French entered Warsaw in 1806, when he was appointed to the command of the Polish army which was to cooperate with the French against Russia. Napoleon estimated his services so highly, that shortly before the battle of Leipsic he created him a Marshal of France. After this disastrous battle, the French were flying in utter confusion over the Elster, and Poniatowski was drowned in the attempt, Oct. 13, 1813.

Poniatowski, Stanislas Augustus, the last king of Poland, and one

of the early lovers of Catherine the Great of Russia. He died at St. Petersburg, in 1798, of a broken heart.

Pontchartrain, Lake, in Louisiana, about 5 miles N. of New Orleans, is 40 miles long and 25 wide. It is navigated by small steamers, and communicates with the Gulf of Mexico. The drainage of New Orleans is carried into the lake through canals.

Pontiac, a celebrated Indian chief of the Ottawa tribe; born about 1712. He was the leader in Pontiac's War, and was killed in Illinois in 1769.

Pontiac's War, an Indian war of 1763 between the English settlers and garrisons on the frontiers, and a combination of Indian tribes, under the leadership of Pontiac. The war lasted two years.

Pontifex, a bridge builder; a title given to the more illustrious members of the Roman colleges of priests. Their number was originally five, the president being styled Pontifex Maximus. The number was afterward increased to nine, and later still to 15. The title of Pontifex Maximus is now the title of the Pope.

Pontifical, one of the service books of the Church of Rome, in which are contained the several services.

Pontoon, a floating vessel supporting the roadway timbers of a floating military bridge.

Pony, a term applied to several subvarieties or races of horses, generally of smaller size than the ordinary horses and which are bred in large flocks and herds in various parts of the world, chiefly for purposes of riding and of lighter draught work.

Poodle, a breed of dog whose origin dates from the beginning of the 17th century or earlier. The poodle is one of the few breeds of dogs which has not been properly appreciated and cultivated in the United States. From his great intelligence and cleverness in learning tricks, he was generally adopted as a circus or "trick dog"; but this fact, instead of making for his credit, has caused the poodle to be treated with contempt.

Pook, Samuel Hartt, an American naval constructor, born in Brooklyn, N. Y., Jan. 17, 1827; was graduated at the Portsmouth Academy, N. H., in 1843. He settled in Boston as a naval architect and designed many merchant and war vessels; entered government service, when the Civil War broke out, and at the close of the war entered the navy as assistant naval constructor and served at different navy yards till his retirement in 1899.

Pool, a game played on a pool table. The term "poolroom" is applied to places, apart from race tracks, in which bets on horse-races are received, and as this is an illegal business, the word frequently occurs in the daily news.

Also, an arrangement between several competing lines of railway, by which the total receipts of each company are pooled, and distributed pro rata according to agreement.

Pool, Maria Louise, an American novelist; born in Rockland, Mass., in August, 1841. She died in Rockland, May 19, 1898.

Poole, William Frederick, an American bibliographer; born in Salem, Mass., Dec. 24, 1821; was a librarian of Boston, Cincinnati, and Chicago. His chief work is the celebrated "Index to Periodical Literature." He died in Evanston, Ill., March 1, 1894.

Poor Clares, a Roman Catholic religious order, having very severe rules, and called after the founder.

Poore, Benjamin Perley, an American author; born in Newbury, Mass., Nov. 2, 1820; spent several years abroad. On his return he became active in journalism. He died in Washington, D. C., May 30, 1887.

Poor Priests, a name given to, or assumed by, the Lollard clergy of the 14th and 15th centuries, who wandered about the country holding what would now be called "missions," without the sanction of the bishop of the diocese.

Pope, specifically, the Bishop of Rome. The term Papa, or Papas (father), has always been given by the Greek Church to presbyters, like the term Father now applied to a Roman priest. In the early centuries the bishops received the same title till, in a council held at Rome in 1076, at the instance of Gregory VII. (Hildebrand), it was limited to the Bishop of Rome. Holding that office, being

also Metropolitan of Rome and primate, and claiming to be the earthly head of the Church universal, it is in the last named capacity that the term Pope is held to be specially applicable. It has been a matter of controversy among Roman Catholics whether the authority of the Pope was above or below that of the General Council. That of Pisa (1409), claiming to be a General Council, deposed two rival Popes,, and appointed a third; but the two former repudiated the authority of the council, and exercised their functions as before. The Council of Constance (1414–1418) also deposed two rival Popes and elected one. "The States of the Church" figured on the map of Europe as an independent sovereignty till Sept. 20, 1870, when the troops of Victor Emmanuel, King of Italy, entered Rome, and took possession of the palace for the Italian kingdom. No interference took place with the Pope's purely spiritual authority.

Pope, Alexander, an English poet; born in London, England, May 21, 1688. His education was a desultory one. He picked up the rudiments of Greek and Latin from the family priest, and was successively sent to two schools, one at Twyford, the other in London. Before he was 15 he attempted an epic poem, and at the age of 16 his "Pastorals" procured him the notice of several eminent persons. In 1711 he published his poem the "Essay on Criticism," which was followed by "The Rape of the Lock," a polished and witty narrative poem founded on an incident of fashionable life. From 1713 to 1726 he was engaged on a poetical translation of Homer's works, the "Iliad" (completed in 1720) being wholly from his pen, the "Odyssey" only half. The pecuniary results of these translations showed a total profit of nearly $45,000. He died in Twickenham, May 30, 1744.

Pope, John, an American military officer; born in Louisville, Ky., March 16, 1822; was graduated at the United States Military Academy in 1842, and entered the engineers. He served in Florida (1842–1844), and in the Mexican War, and was brevetted captain for gallantry. He was afterward employed in exploring and surveying in the West, till the outbreak of the Civil War, when he was appointed Brigadier-General of volunteers. For 15 days in August, 1862, he faced Lee, but was defeated at the second battle of Bull Run, on the 29th and 30th. He then requested to be relieved, and was transferred to Minnesota, where he kept the Indians in check. He held various commands till 1886, when he retired. In 1882 he became Major-General, U. S. A. Pope died in Sandusky, O., Sept. 23, 1892.

Popinjay, a parrot; a figure of a bird put up as a mark for archers to shoot at. The green woodpecker is also sometimes called popinjay. Also applied to a man who dresses too showily.

OPIUM POPPY.

a, whole plant; *b*, flower and leaf; *c*, ripe capsule; *d*, seed and section of seed enlarged.

Popish Plot, in English history, an alleged plot made known by Titus Oates in 1678. He asserted that two men had been told off to assassinate Charles II., that certain Roman Catholics whom he named had been ap-

pointed to all the high offices of the State, and that the extirpation of Protestantism was intended. On the strength of his allegation, various persons were executed. Gradually evidence arose that the whole story was a fabrication, and that the people who had been capitally punished were all innocent. On May 8, 1685, Oates, who had received a pension of $10,000 for his revelations, was convicted of perjury, heavily fined, pilloried and publicly flogged. He died in 1705.

Poplar, a tree. Known species 18, from the N. temperate zone. The great white poplar, or abele, is a large tree, growing in moist places and mountain woods.

Poplin, a silk and worsted stuff, watered, figured, brocaded, or tissued. Originally an all-silk French goods.

Popocatepetl ("smoking mountain"), a volcano about 40 miles S. E. of the city of Mexico. It rises in the form of a cone to a height of 17,784 feet above the sea-level. No eruption has been recorded since 1540; it still smokes.

Poppy, a genus of plants, of which there are numerous species, mostly natives of Europe and Asia, some of them found in the very N. regions, but most of them in the warmer temperate parts. By far the most important species is that known as the opium poppy, also called the white poppy and the oil poppy. But the same species is important on account of the bland fixed oil of the seeds, and is much cultivated as an oil plant. Poppy oil is as sweet as olive oil, and is used for similar purposes. It is imported into the United States in considerable quantities from India. A variety with double flowers is cultivated in flower gardens, under the name of carnation poppy. Among the ancients the poppy was sacred to Ceres.

Population. (1) The act or process of populating or peopling. (2) The inhabitants of a country, district, town, etc., collectively. (3) The state of a country with respect to the number of its inhabitants; populousness.

Porbeagle, a fish of the Lamnidæ family of sharks. Three species have been described; the best known occurs in the N. Atlantic.

Porcelain, a fictile material intermediate between glass and pottery, being formed of two substances, fusible and infusible, the latter enabling it to withstand the heat necessary to vitrify the former, thus producing its peculiar semi-translucency. The infusible material is alumina, called kaolin; the fusible substance is felspar, and is called pe-tun-tse, both Chinese terms.

PORCELAIN MARKS.

Large quantities of porcelain are produced in the United States. Around Trenton, N. J., is the seat of the industry. It is also manufactured extensively in Europe.

Porcupine, a rodent quadruped. The North American porcupine is about two feet long, and of sluggish habits. The quills are short, and concealed among the fur, and the tail is short. The "tree porcupine" of South America has a prehensile tail, about 10 inches long. The porcupine of Southern Europe and Africa is about 28 inches long, exclusive of the tail. The head, fore quarters, and under surface are clothed with short spines, intermixed with hairs, crest on head and neck, hind quarters covered with long sharp spines, ringed with black and white, and erectile at will. They are but loosely attached to the skin and readily fall out, a circumstance which probably gave rise to the belief that the animal was able to project them at an enemy.

Porcupine Crab, a native of Japan. The carapace is triangular, and, like the limbs, thickly covered with spines. It is dull and sluggish in its movements.

Porcupine Fish, a fish found in the tropical seas. It is about 14 inches long, and is covered with spines or prickles.

PREHENSILE-TAILED PORCUPINE.

Porgy, Poggy, or **Paugie,** an important food fish found on the coast of the United States. It attains a length of 18 inches and a weight of about four pounds.

Pork, the flesh of swine; one of the most important and widely used species of animal food. The swine was forbidden to be eaten by the Mosaic law, and is regarded by the Jews as especially typical of the unclean animals. Other Eastern nations had similar opinions as to the use of pork. In the United States the pork-packing industry is one of the greatest factors of wealth. The immense establishments at Chicago, Kansas City, Omaha, St. Louis, Indianapolis, Cincinnati, and other cities, represent many millions of dollars invested in this branch of trade and commerce.

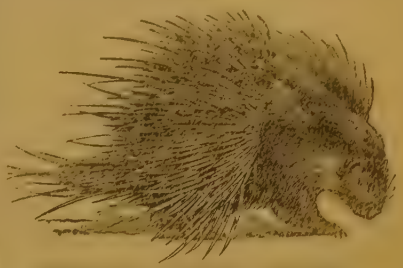
Porosity, the quality or state of being porous or of having pores.

Porphyrio, a genus of birds occurring in South America, in Africa, and in the S. of Europe, but chiefly Oriental. In habits they resemble the water hen, but are larger and more stately birds.

Porphyry, a term originally applied to a rock having a purple covered base, with inclosed individual crystals of a felspar.

Porpoise, a small cetacean. The common porpoise, when full grown, attains a length of about five feet. The head is rounded in front, and the snout is not produced into a beak. The external surface is shining and hairless, dark grey or black on the upper parts, under pure white. It is gregarious in habit, and is often seen in small herds, frequenting the coasts rather than the open seas. It often ascends rivers, and ranges as far N. as Baffin Bay and as far W. as the coast of the United States.

Porsenna, or **Porsena,** a celebrated leader and king of Etruria, who declared war against the Romans because they refused to restore Tarquin to his throne. At first successful, he would have entered the gates of Rome had not Horatius Coccles stood at the head of a bridge and resisted the fury of the whole Etrurian army, while his companions behind were cutting off the communication with the opposite shore. This act of bravery astonished Porsenna; but when he had seen Mutius Scævola, who had entered his camp with the intention of murdering him, burn his hand without emotion, to convince him of his fortitude, he no longer dared to make head against so brave a people. He made a peace with the Romans, and never after supported the claims of Tarquin.



PORCUPINE: HYSTRIX CRISTATA.

Port, a harbor, natural or artificial; into which vessels can enter, and in which they can lie in safety from storms. In law, a place appointed for the passage of travelers and merchandise into or out of the United States; a place frequented by vessels for the purpose of loading or discharging cargo, and provided with the apparatus necessary to enable them to do so.

Port, a species of red wine, produced chiefly in the mountainous districts of Portugal, and shipped from Oporto.

Port Arthur, Lushwankau, or **Lushunku,** a former naval station of China, with a fine narrow-mouthed harbor at the end and on the E. side of the peninsula jutting S. W. from Manchuria, opposite Chifu, strongly fortified; formerly the headquarters of the N. fleet of China. It was taken by the Japanese in 1894, and was restored to China by coercion of European powers. On Dec. 19, 1897, a Russian fleet occupied Port Arthur with China's consent, the pretext being that the ships would simply winter there. On Jan. 28, 1898, Port Arthur was ceded to Russia.

Port Arthur Ship Canal, an artificial waterway in Texas. The small town of Port Arthur is situated on Sabine Lake, a body of water 3 miles long and 10 miles wide, which marks the boundary of Texas and Louisiana. Seven and one-half miles from Port Arthur Sabine Lake narrows into a long channel called Sabine Pass. This channel is from 26 to 40 feet deep and extends for 7 miles to the S., terminating in the Gulf of Mexico. At the outer end of the pass is a bar which has been pierced by a channel formed by extending for a mile or more from shore two jetties of piled stone, built by the United States government. The jetties narrow the entrance to the pass from the Gulf, and the wash of the imprisoned waters to and fro, with the ebb and flow of the tide, has secured a channel over the bar of 16 to 25 feet deep. The opening of this canal signalized the reduction by 500 miles of the distance over which the export food products of the S. W. States have been hauled by E. and W. lines.

Port-au-Prince, the capital of Haiti, situated on the W. coast at the head of a bay of the same name. Pop. about 50,000.

Portcullis, a strong defensive framework of timber, hung in grooves within the chief gateway of a fortress, or a castle, or an edifice of safety.

Porte, Ottoman, or **Sublime Porte,** the common term for the Turkish government.

Porter, David, an American naval officer; born in Boston, Mass., Feb. 1, 1780, the son of a naval officer who fought through the Revolutionary War. He was appointed midshipman in 1798, and lieutenant the year after; saw service against privateers in the West Indies, and against Tripoli in 1801–1803; became captain in 1812, and captured the first British warship taken in the war. In 1813, with the "Essex" he nearly destroyed the English whale fishery in the Pacific, and took possession of the Marquesas Islands; but in March, 1814, his frigate was destroyed by the British in Valparaiso Harbor, and Porter returned home on parole. He afterward commanded an expedition against pirates in the West Indian waters, and was court-martialed for compelling the authorities at Porto Rico to apologize for imprisoning one of his officers. Porter resigned in 1826, and was for a time at the head of the Mexican navy. In 1829 the United States appointed him consul-general to the Barbary States, and then minister at Constantinople, where he died, March 3, 1843.

Porter, David Dixon, an American naval officer; born in Chester, Pa., June 8, 1813; son of Commodore David Porter. He entered the navy as midshipman in 1829; was employed in 1836 to 1841 in the survey of the coast of the United States; in 1841 appointed as lieutenant to the frigate "Congress," and employed four years on the Mediterranean and Brazil stations; in 1845 was transferred to the National Observatory at Washington, and during the Mexican War to the naval rendezvous at New Orleans; again to the coast survey, and from 1849 to 1853 engaged in command of the California mail steamers. At the commencement of the Civil War he was appointed with the rank of commander, to the steam sloop-of-war "Powhatan"; distinguishing himself in the capture of New Orleans, and commanded the gunboat and mortar flotilla which coöperated with the squadron of Admiral Farragut in the first attack on Vicksburg. In the fall of 1862 he was placed in command of all the naval forces on the W. rivers above New Orleans, with the rank of rear-admiral. At the termination of

the war appointed superintendent of the United States Naval Academy, Annapolis. He was made vice-admiral in 1866, and in 1870 became admiral. He died in Washington, D. C., Feb. 13, 1891.

Porter, Fitz-John, an American military officer; born in Portsmouth, N. H., June 13, 1822; was graduated at the United States Military Academy in 1845; served in the Mexican War. In 1861 was appointed colonel of the 15th U. S. Infantry. For an alleged disobedience at the second battle of Bull Run, Aug. 29, 1862, Porter was court-martialed, and on Jan. 21, 1863, was cashiered. In 1878 a trial was granted, and the court recommended that the former sentence be reversed, and that he be restored to his former rank in the army, but no decisive action was taken. New evidence came to light, General Grant affirming that Porter had been unjustly treated, and a bill was introduced in Congress providing for his reinstatement. In 1886 the bill passed both Houses, and became a law by the signature of the President. He died in New York city May 21, 1901.

Porter, Horace, an American military officer and diplomatist; born in Huntingdon, Pa., April 15, 1837; son of David R. Porter, who became governor of the State. After a year in the scientific department of Harvard University he entered the United States Military Academy. His graduation took place in 1860. After a brief space as instructor in artillery at West Point, he was assigned to duty in the Department of the East. He served through the Civil War, becoming brevet Brigadier-General. When General Grant became Secretary of War General Porter became the assistant secretary, and during his chief's service as President acted as private secretary. General Porter then went into business and was exceedingly successful. The completion of the Grant monument is largely the result of his efforts. In 1897 he was appointed by President McKinley ambassador to France, and is holding that post in 1903. He has written "Campaigning with Grant," etc.

Porter, James Davis, born in Paris, Tenn., Dec. 7, 1828; was graduated at the University of Nashville in 1846; admitted to the bar in 1850; member of the Tennessee Legislature in 1859–1861; judge of the 12th Judicial Circuit in 1870–1874; governor of Tennessee in 1874–1878; United States assistant-secretary of State in 1885–1889; and United States minister to Chile in 1893–1897.

Porter, Jane, an English author; born in Durham, England, in 1776; daughter of an army-surgeon who died soon after her birth. She was brought up at Edinburgh and in London, and made a great reputation in 1803 by her high flown romance, "Thaddeus of Warsaw," which was distanced in its kind in 1810 by "The Scottish Chiefs." She died in Bristol, England, May 24, 1850.

Porter, John Addison, an American journalist; born in New Haven, Conn., April 17, 1856. He was editor of the Hartford "Post." President McKinley appointed him "secretary to the President" — an office that was created to replace the misnamed post of the "private secretary" at the White House. He died in Putnam, Conn., Dec. 15, 1900.

Porter, Noah, an American educator; born in Farmington, Conn., Dec. 14, 1811. In 1846 he was appointed Professor of Metaphysics at Yale University; and was president of that institution from 1871 to 1885. He died in New Haven, Conn., March 4, 1892.

Porter, Robert P., an American statistician; born in Norfolk, England, Jan. 30, 1852; settled in the United States in 1867, and soon afterward engaged in journalism; was for a while superintendent of the 11th census; and was a special United States commissioner to Cuba and Porto Rico in 1898–1899.

Porter, Rufus, an American inventor; born in West Roxford, Mass., May 1, 1792; devised a thermo-engine, rotary-engine, cornsheller, rotary plow, etc., and founded "The Scientific American." He died in New Haven, Conn., Aug. 13, 1884.

Porter, The, a twin-screw, steel torpedo boat of the United States Navy.

Portland Breakwater, the greatest work of the kind in Great Britain, runs from the N. E. shoulder of the Isle of Portland in a N. E. direction,

with a bend toward the English Channel, and forms a complete protection to a large expanse of water between it and Weymouth, forming an important harbor of refuge. It consists of a sea wall 100 feet high from the bottom of the sea, 300 feet thick at the base, and narrowing to the summit, and has a length of 1⅝ miles. The work, which was carried out by government, occupied a period of nearly 25 years, ending with 1872, and cost $5,168,000. The Isle of Portland is a peninsula with a celebrated convict prison.

Portland Stone, a freestone quarried in the Isle of Portland, Great Britain, hardening by exposure to the air, and much used for building purposes in London.

Portland University, a coeducational institution in Portland, Or.; founded in 1891 under the auspices of the Methodist Episcopal Church.

Port Orchard, a United States naval station in Kitsap co., Wash.; on Port Orchard Bay, an inlet of Puget Sound, 18 miles W. of Seattle; formerly known as Sidney; name changed in 1894. In 1891 the government purchased 200 acres of land and expended $700,000 in building a dry dock 600 feet long by 75 feet wide and capable of holding vessels with a draught of 30 feet, being thus the largest dry dock in the United States, if not in the world.

Porto Rico, a West Indian island; 70 miles E. of Haiti; till 1898 a colony of Spain; area, 3,600 square miles; pop. 953,243; capital, San Juan, metropolis, Ponce. Under the provisions of the Spanish-American peace protocol the American flag was officially raised and the island formally transferred to the United States on Oct. 18, 1898. The Spanish form of the name of the island is Puerto Rico; but an Act of the United States Congress approved April 12, 1900, established the official form as Porto Rico. The people are most loyal in their devotion to their new country and are solicitous to be regarded as a part of the United States. While there is a great amount of wealth in the island, and in many places evidences of great prosperity, rich plantations, and promise of a great future for Porto Rico, throughout the interior of the island the people are poor and their homes are of the poorest character, consisting almost altogether of "shacks" constructed of the palm and covered with a straw thatch or palm leaves. Into the cities and these homes is crowded a large population, variously estimated from 800,000 to 1,000,000. They are generally a peaceful and law-abiding people, and while there is unquestionably some lawlessness, and some small offenses are being committed, they do not exceed, if they equal, the number being committed in the States of a like population. It has been estimated that from 10 to 20 per cent. only of the people can read and write. The people are anxious to have their children educated, and are exceedingly solicitous for the establishment of public schools. There is no starvation upon the island, and while there is great poverty in many places, there can not be any real starvation in Porto Rico, for the reason that the people live frugally and are content with little, while the soil and the climate are so productive of many of the simple necessaries of life that it would be almost impossible to starve a people who live upon tropical fruits and tropical vegetable productions.

Vegetables of all kinds known to our climate grow in abundance. Irish potatoes are not a success. There are no plums, cherries, or grapes. It would seem that there would be no difficulty in growing grapes, but so far they have not been tried. Indian corn is raised with some success, and while the ears are small, that is made up by the fact that two and even three crops can be grown yearly on the same ground. This can be grown either in the valleys or on the hillsides. No wheat is grown on the island. At present all flour is imported.

The native grasses grow luxuriantly wherever an opportunity offers, from the lowest valley to the highest mountain top, and afford excellent pasture for stock everywhere all the months of the year. They make no hay, but cut it with sickles or the machete and tie it in small bundles, pack it on ponies to the cities, and sell it while it is still green. The cattle grazing in large numbers on the pastures are

found all over the island, and are mostly in very good condition, making excellent beef. Hogs are raised to a limited extent, but are of poor breeds, being of the old "razor-back" variety. They are fed mainly from the nuts grown on the royal palm trees. Horses are plentiful. They are small, and used only to ride and as pack ponies and in carriages. The hard work of hauling loads and ploughing the land is done with oxen, yoked in the Spanish fashion by tying the yoke to the horns, and they are guided with a whip or "gad." The wagons are mostly two-wheeled carts with large wooden axles.

There seems to be a considerable deposit of iron and copper on the island. In some places these are being developed with good prospects of proving paying investments. Traces of gold and silver are also found in the mountains, but up to date prospecting has not developed any considerable quantities of these more precious metals.

Soon after the surrender of Santiago de Cuba to the American forces under General Shafter, July 17, 1898, an army numbering 16,973 men was sent from Guantanamo to Porto Rico to take possession of that island. They landed July 25, at Quanica, 15 miles W. of Ponce. Lieutenant Haines, commanding the marines, went ashore and raised the American flag over the custom house, amid the cheers of the people. General Wilson was the first army officer to land, and was welcomed with cheers and a serenade. A portion of the army marched toward the capital, San Juan, but were stoppped when about half way by the suspension of hostilities between the belligerent powers. On Oct. 18 the island was formally surrendered to the United States in the city of San Juan.

In 1899 a census of the island was taken under the direction of the United States War Department, which by departments gave the following. Aguadillo, 99,645; Arecibo, 162,308; Bayamon, 160,046; Guayamo, 111,986; Humacao, 88,501; Mayaguez, 127,566 and Ponce, 203,191 — total for the island, 953,243. The island has prospered greatly under American rule, and is fast becoming Americanized.

Port Phillip, the gate of Melbourne, discovered in 1802 by Lieutenant Murray, and named in honor of Captain Phillip, the first governor of New South Wales.

Port Said, a town of Egypt, on the W. side of the Suez Canal, on a desolate strip of land between Lake Menzaleh and the Mediterranean. The place owes its origin to the Suez Canal, and depends wholly on the canal trade.

Portsmouth, the principal station of the British navy, a seaport, municipal and parliamentary borough of England, in Hampshire, on the S. W. extremity of the island of Portsea. The royal dockyard covers an area of about 500 acres. Inclosed by a wall of 14 feet high, it contains the materials requisite for naval architecture; machine shops, extensive slips and docks, ranges of handsome residences for the officials, and a Royal Navy College, with accommodation for 70 students. Outside the dockyard an area of 14 acres contains the gun wharf. Of late years an extensive and systematic series of fortifications has been under construction for the complete defense of Portsmouth. Pop. (1901) 189,160.

Portugal, the extreme W. kingdom of Europe, forming the W. portion of the Iberian peninsula; area, 36,038 square miles; pop, 5,049,729.

The country generally inclines from N. E. to S. W. Several of the great mountain chains of Spain intersect it from E. to W. and terminate in large promontories in the Atlantic. The principal rivers are the Tagus, the Douro, the Minho, and the Guadiana. These all enter the country from Spain, and flow W. to the Atlantic Ocean. The climate is healthy, except in the vicinity of salt marshes.

The principal agricultural productions are: wheat, barley, oats, flax, hemp, vines, and maize in the elevated tracts; rice in the low grounds, with olives, oranges, lemons, citrons, figs, and almonds. Silk is made of a very good quality. There are extensive forests of oak in the N., chestnut in the center, and the sea pine and cork in the S. Cattle, sheep, goats, and swine are numerous, and fish abound in the rivers and on the coasts. Iron mines are worked, and the mountains

abound in fine marble, and contain traces of gold and silver. Of salt, large quantities are formed in bays along the coast, by natural evaporation. There are numerous salt marshes, and upward of 200 mineral springs. The manufactures are limited. Cotton spinning is followed, and paper, glass, and gunpowder are made in a few places.

The exports consist almost entirely of wine, salt and wool; imports, chiefly corn, flour, fish, woolens, linen, cotton, lace, hardware, hats, shoes, and stockings. The state religion is the Roman Catholic; but all others are tolerated. The government is a limited monarchy. The national assembly is called the Cortes, and consists of a House of Deputies and a House of Peers.

Portugal forms the greater part of ancient Lusitania. It was subjugated by the Romans, in the time of Augustus, and had been made into a province. In the 5th century, on the overthrow of the Roman supremacy, Portugal was invaded by the Alans and Visigoths, and suffered with Spain, of which it was then a part, all the troubles and vicissitudes endured by the inhabitants of the peninsula till the 8th century, at which time the Arabs, called indifferently Saracens or Moors, possessed themselves of the whole of Portugal, and kept absolute dominion for nearly 400 years. In the 12th century, Don Alonzo Henriquez, a Spanish prince of Leon and Castile, gained a great victory over the Moors of Portugal, and carried out his military operations with such success that his troops hailed him with one voice as king. He renounced all dependence on Spain, politically separated his new kingdom from all connection or authority with the Spanish crown, and established a free and sovereign state.

Under the descendants of Don Alonzo I., especially Dennis I. and Alonzo IV., Portugal, during the next two centuries, rose in political importance and commercial prosperity. In 1385, the King of Castile having laid claim to the crown of Portugal on the death of Ferdinand, was opposed and defeated by Don John, Ferdinand's brother. Under John I. the Portuguese first projected those Atlantic discoveries on the African coast, fraught with such territorial and commercial advantages to the nation; and, under John II. and Emanuel, between 1481 and 1521, Vasques de Gama explored the Indian Ocean; and Brazil was added to the possessions of the crown of Portugal. Sebastian III., fired with a holy zeal to exterminate the infidels from his country, commenced a sanguinary crusade against the Moors, which he carried on through such defeats that he eventually lost both his crown and life in the struggle. Henry the Cardinal, his uncle, an old man of 70, ascended the throne, but died without heirs, after a reign of only two years, in 1580.

With Henry terminated the male line, after enduring for 460 years. Spain once more laid claim to the vacant throne, and Portugal again became a dependency of the Spanish crown. After enduring 60 years of intolerable hardships and exactions, a Portuguese nobleman named John, Duke of Braganza, excited a revolution, which again broke the Spanish fetters, while the people hailed their deliverer as their king. He was crowned as John IV., commenced the dynasty of the House of Braganza, a family whose descendants still sway the destinies of Portugal. In October, 1889, Carlos I. succeeded to the throne.

Portulaca, purslane; low, succulent herbs with flat or cylindrical leaves, and yellow, purplish, or rose-colored ephemeral flowers.

Poseidon, the Greek god of the sea, identified by the Romans with the Italian deity Neptunus.

Positive Philosophy, the system of philosophy outlined by Auguste Comte in his "Philosophie Positive," the sixth and last volume of which was published in 1842. It is the outcome of the Law of the Three Stages and is based on the positive sciences, taken in the following series: mathematics (number, geometry, mechanics), astronomy, physics, chemistry, biology, and sociology. It relinquishes attempts to transcend the sphere of experience, and seeks to establish by observation and induction laws or constant relations, and resigns itself to ignorance of the agents. In the opinion of its founder it is capable of be-

ing developed into a religion and a polity.

Positive Society, a society founded in Paris in 1848, by Comte, in the hope that it might exert as powerful an influence over the revolution as the Jacobin Club had exerted in 1789. In this he was disappointed, but the disciples who gathered around him were the germ of the Positivist Church.

Positivism, the religion of Humanity, developed from the positive philosophy, and claiming to be a synthesis of all human conceptions of the external order of the universe. Its professed aim, both in public and private life, is to secure the victory of social feeling over self love, of altruism over egotism.

Possession, a word having several applications. The act or state of possessing or holding as owner or occupant; the state of owning or being master of anything; the state of being seized of anything; occupancy; ownership, rightful or wrongful. In Scripture, the taking possession of the body or spirit by demons or devils.

Post, Charles Cyrel, an American politician; born in Shiawassee, Mich., May 16, 1846; studied at Hiram and Oberlin Colleges, Ohio; was admitted to the bar in 1874; then entered journalism. He was a leader in the greenback movement and organized the anti-monopoly movement that nominated General Butler for President. He settled in Florida in 1892 and in 1899 founded the School of Scientific Philosophic and Psychic Research. He wrote "Metaphysical Essays"; "From Wabash to the Rio Grande"; etc.

Post, George Browne, an American architect; born in New York city; studied with Richard M. Hunt; designed numerous private residences and public buildings; and became president of the American Institute of Architects, the National Art Club, and the American Society of Civil Engineers.

Postal Service, the regulation of communication between different parts of a country, or different countries, including especially the forwarding and delivering of letters, newspapers and small packages, and the establishment of a registry system for the transfer of money and the transaction of other financial business. In some countries the use of the telephone and the telegraph forms a part of the postal service.

Though the conveyance of letters is the primary work of the postoffice, many other branches of business have been assumed by it. The word "post" has its particular application from the posts, or stages, at which on the roads of the Roman empire couriers were maintained for the purpose of conveying news and dispatches.

Under the terms of a treaty concluded at Berne, Oct. 9, 1874, the object of which was to secure uniformity in the treatment of correspondence, and the simplification of accounts, as well as the reduction of rates within certain limits, and whose provisions were carried into operation generally July 1, 1875, the whole of Europe, the United States, Egypt, British India, and all the colonies of France were at the outset, or shortly thereafter, included in the union and many other countries and colonies have since joined it. The international accounts in respect of postages are based on a month's return of correspondence taken every third year.

At the present time the postal establishment of the United States is the greatest business concern in the world. It handles more pieces, employs more men, spends more money, brings more revenue, uses more agencies, reaches more homes, involves more details and touches more interests than any other human organization, public or private, governmental or corporate. Though the postal service of England, France, and Germany includes the telegraph, the postal business of the United States surpasses the service of any of those countries.

Since Cuba, Porto Rico, and the Philippines have come under the authority of the United States, it has become necessary to reconstruct the mail system in those islands, and already a vast improvement has been made in the service.

Post Mortem, after death, as a post morten examination, i. e., one made after the death of a person, in order to ascertain the cause of death either in the interests of science, or for the ends of justice.

Post Obit, a bond given as security for the repayment of a sum of money to a lender on the death of some specified person, from whom the borrower has expectations. Such loans in almost every case carry high, if not usurious, rates of interest, and generally the borrower binds himself to pay a much larger sum than he receives, in consideration of the risk which the lender runs in case of the borrower dying before the person from whom he has expectations.

Postoffice Department, one of the executive departments of the United States government; established in 1794. It is under the management of the Postmaster-General, who since the time of Andrew Jackson, has been a member of the President's Cabinet. He is appointed by the President and confirmed by the Senate. The department is divided into four great bureaus each under the immediate charge of an assistant postmaster-general. The first assistant's bureau has charge of the large clerical and carrier forces and all the matters of actual management. It supervises an annual expenditure of more than $40,000,000. The bureau of the second assistant has the immense task of providing for the transportation of the mails at a yearly cost of $35,000,000. That of the third assistant looks after the financial side, furnishes the stamps, and keeps the accounts. The fourth assistant has charge of the appointment of 75,000 postmasters and directs the force of inspectors. The United States postoffice department, unlike that of Great Britain, is carried on at a loss; this is due to the large amount of postal matter of certain classes carried at less than the cost of conveyance and distribution.

Postulant, in the Roman Catholic Church, one seeking admission to a religious order or congregation.

Postulate, a position, supposition, or proposition assumed without proof, as being self-evident or too plain to require proof or illustration; a thing assumed for the purpose of future reasoning; an assumption. In geometry, the enunciation of a self-evident problem. It differs from an axiom, which is the enunciation of a self-evident proposition. The axiom is more general than the postulate.

Potash, a term applied to the hydrate of potassium, either in the liquid or solid state, but sometimes used to denote potassium oxide and also crude carbonate of potassium. Potash salts are essential constituents in the human body, but if, when wasted, they are supplied directly to the blood they are very poisonous.

Potassium, a monad metallic element, very widely diffused through the vegetable, mineral and animal kingdoms. It usually exists in combination with inorganic and organic acids, and, when its organic salts are burned, they are resolved into carbonate, from which all the other salts of potassium can be prepared. It may be obtained by electrolysis, but is now produced in large quantity by distilling in an iron retort an intimate mixture of charcoal and carbonate of potassium, a condition readily obtained by igniting crude tartar in a covered crucible.

Potato, or **Potatoe,** a well-known plant, the tubers of which are eaten. It is a native of Chile and Peru. Many varieties are grown, differing in earliness, form, size, color, etc.

The production in the United States in the calendar year 1900 was 210,926,897 bushels, valued at $90,811,167. New York, Michigan, Wisconsin, Illinois, Iowa, Ohio, and Pennsylvania were the most productive States, in the order given.

Potato Fly, a dipterous insect of the same genus with the radish fly, cabbage fly, turnip fly. In its perfect state it is very like the house fly. The maggots are often abundant in bad potatoes in autumn, and are different from the maggots of the house fly, being horny, spiny, bristly, and tawny; the long tail ending in six long bristles. The pupa is very like the larva. The potato-frog fly and the caterpillar of the death's head moth feed on the leaves and stems of potatoes, but rarely do serious damage.

Potomac, a river of the United States, formed by two branches which rise in the Allegheny Mountains in West Virginia, and unite 15 miles S. E. of Cumberland, Md., from which point the river flows in a generally S. E. course 400 miles, and falls into Chesapeake Bay, after forming an estuary nearly 100 miles long, and

from 2½ to 7 miles wide. The largest ships can ascend to Washington. The Potomac forms the greater part of the boundary between Virginia and Maryland.

Potomac, Army of the. The Union forces which operated in Virginia in the Civil War were known as the "Army of the Potomac." It was organized by Gen. George B. McClellan in 1861, and served under him in the Peninsular campaign and later in that of Antietam. General Burnside took command in 1862, and General Hooker in 1863. General Meade was in command when the victory at Gettysburg was won, in July, 1863, and continued in charge during General Grant's operations in 1864–1865.

Potomac, Society of the Army of the, a military organization founded in New York, July 5, 1869, and has held annual reunions since that date. All officers and soldiers who served in

ARMY OF THE POTOMAC BADGE.

the Army of the Potomac and in the 10th and 18th Army Corps, Army of the James, are eligible to membership.

Pottawattamies, a tribe of American Indians, belonging to the Algonquin stock. The early French settlers established a mission among them at Green Bay, and to this day many of them are Roman Catholics. They sided with the English during the Revolutionary War and in the War of 1812, and afterward settled in Kansas. They now number about 1,200.

Potter, Henry Codman, an American clergyman; born in Schenectady, N. Y., May 25, 1835. Educated in theology in Virginia, he became rector of Grace Church, New York city, in 1868; and was consecrated Protestant Episcopal bishop of New York in 1887. His works include: "Gates of the East: A Winter in Egypt and Syria"; "Sermons of the City"; "Waymarks"; etc. He is widely known and esteemed for his practical efforts to improve the condition of the mass of the people.

Potter, Paul M., an American dramatist; born in Brighton, England, June 3, 1852; entered journalism and was foreign editor of the New York "Press" in 1876–1883. Subsequently he turned his attention to the drama, and in 1889 composed his first play. His best known works are: "Our Country Cousins," a dramatization of "Trilby," and "Under Two Flags." He was the American representative at the Congress of Dramatic Art at the Paris Exposition in 1900.

Pottery, the art of forming vessels or utensils of any sort in clay. This art is of high antiquity, being practised among various races in prehistoric times.

The most celebrated ware of different times and countries are distinguished by distinctive names; as, Majolica-ware, Sevres, Chelsea, Palissy, etc.; and of these, the latter — the work of Bernard de Palissy, who lived in the 16th century — deserves some special attention. Palissy, having resolved to discover a method of enamelling stoneware, succeeded, after 16 years' efforts, and proceeded to manufacture pottery characterized by a peculiar style and many singular qualities. It is not decorated with flat painting, but with figures and ornaments, which are generally pure in form, and are all executed in relief and colored. The most remarkable of the works of Palissy are his "Pieces rustiques," a designation given by him to dishes ornamented with fishes, snakes, frogs, crayfish, lizards, shells, and

plants, admirably true to nature in form and color. Palissy ware may be distinguished from imitations by the fact that Palissy molded only the fossil shells, reptiles, and plants of Paris, while his imitators introduced recent shells and other objects of natural history.

In the United States the total value of pottery products, for 1900, was $19,798,570, of which $6,405,800 was decorated ware; and $10,323,963 was white granite, and semiporcelain.

Potts, William, an American author; born in Philadelphia, Pa., May 5, 1838. For many years he was secretary and vice-president of the National Civil Service League. He was chief examiner of the Civil Service Commission of New York State in 1887. He published a volume of nature studies, "From a New England Hillside," and a Sunday-school service book, "Noblesse Oblige," etc. He is also the author of numerous pamphlets.

Pouched Mouse, a genus of small, lean, long-tailed, agile rodents, with cheek-pouches. The best known species is in the waste regions of California, where it seems to find a sparse diet of seeds and roots, and in the dry season no drink but dew.

Pouched Rat, a genus of plump, short-tailed, hamster-like rodents, with cheek pouches which open externally and are used as receptacles for food. One of the best-known species is sometimes called "gopher." Like the other species it is a native of North America, and inhabits the territory E. of the Rocky Mountains and W. of the Mississippi. It is a burrower like the mole, active in warm weather, hibernating in the cold, sluggish above ground, but very active in its subterranean progress. The cheek pouches are very large, and are crammed with roots, seeds, etc., but not with earth as the Indians used to maintain. Being voracious gnawers, the pouched rats do much damage to the roots of trees and crops.

Poulpe, a genus of Cephalopoda, having eight feet or arms, nearly equal, united at the base by a membrane, and very long in proportion to the body. There is no shell or internal "pen." The arms are used for swimming in water, creeping on land, and seizing prey. Poulpes swim by contractions of the muscular web of the body, which extends upon the arms. They creep on shore in a spider-like manner, with sprawling arms. Like other cephalopods, when alarmed or annoyed, they discharge an inky fluid.

Poultice, a soft composition, as of bread, meal, bran, or a mucilaginous substance, to be applied to sores, inflamed parts of the body, or the like; a cataplasm.

Poultry, a general name for all birds bred for the table, or kept for their eggs. The birds most commonly included under this designation are the common fowl, the peafowl, the guinea fowl, the turkey, goose, and duck. Among the breeds most in favor are those known as Dorking, Game, Hamburg, Cochin, Brahma, Scots Gray, Polish, Spanish, Leghorn, Plymouth Rock, Houdan, Minorca, etc. Hatching by artificial means has long been practised in Egypt, and artificial incubators are now well known in the United States and other countries.

Pound, a unit of weight. Pounds are of different kinds, as pounds Troy (containing 12 ounces), pounds avoirdupois (containing 16 ounces), etc. A cubic inch of distilled water, at 62° F., the barometer being 30 inches, weighs 252.458 Troy grains, and the Troy pound is equal to 5,760 of these grains. The avoirdupois pound is equal to 7,000 Troy grains, so that the Troy pound is to the avoirdupois as 144 to 175. Pound is also the principal English coin of account, and corresponding to the "coin of circulation" called a sovereign, of the value of about $4.80. It is divided into 20 shillings or 240 pence, and weighs 123.27447 Troy grains (7.98805 grammes), as determined by the British Mint regulation, in virtue of which a mass of gold weighing 40 pounds Troy is coined into 1,869 sovereigns.

Powderly, Terrence Vincent, an American lawyer; born in Carbondale, Pa., Jan. 22, 1849. He was General Master-Workman of the Knights of Labor in 1879–1893; then he studied law; and was admitted to the bar in 1894. He was appointed United States commissioner general of immigration on Aug. 3, 1897. His publications include "Thirty Years of Labor";

"History of Labor Day"; and numerous articles on economic subjects.

Powell, Baden, an English physicist; born in London, Aug. 22, 1796; educated at Oriel College, Oxford; in 1821 became vicar of Plumstead, and in 1824 was made F. R. S. From 1827 till his death, he was Savilian Professor of Geometry at Oxford. He published a history of natural philosophy, treatises on the calculus, optics, and the undulatory theory of light; but he is best known by his contribution on the evidences of Christianity to the "Essays and Reviews" and by other theological works, regarded at the time as dangerously "liberal" in tendency. He died in London, June 11, 1860.

Powell, John Wesley, an American geologist; born in Mount Morris, N. Y., March 24, 1834. He was educated at Oberlin College; was a lieutenant-colonel of artillery at the close of the Civil War; Professor of Geology in the Illinois Wesleyan University, 1865; explored the canyon of the Colorado river in 1867 and in 1870–1874. He was director of the United States Geological Survey in 1879–1896, and of the United States Bureau of Ethnology after 1879. The special volumes of reports written by Major Powell are: "Exploration of the Colorado River in 1869–1872"; "Geology of the Uinta Mountains"; "The Arid Regions of the United States"; "Introduction to Study of Indian Languages"; "Canyons of the Colorado," etc. He died Sept. 23, 1902.

Powell, Thomas, an American author; born in London, England, Sept. 3, 1809. For many years he was connected with the Frank Leslie publications. He died in Newark, N. J., Jan. 13, 1887.

Powelson, Wilfred van Nest, an American naval officer; born in Middletown, N. Y., Sept. 15, 1872; was graduated at the United States Naval Academy in 1893; was selected by the government to pursue a special course in naval architecture at the University of Glasgow, served two years on the flagship "New York," and later on the "Fern." After the destruction of the "Maine" in Havana harbor he was appointed to investigate the disaster. His report showing that the "Maine" was sunk by an exploded mine was published and favorably commented on by many scientific periodicals. He commanded the gun on the "St. Paul" which sunk the "Terror," a Spanish torpedo boat, near San Juan, Porto Rico; was promoted lieutenant, March 6, 1901.

Power. In mechanics: (1) That which produces motion or force; that which communicates motion to bodies, changes the motion of bodies, or prevents the motion of bodies; a mechanical agent or power. (2) The moving force applied to overcome some force or resistance, to raise a weight, or produce other required effect; air, water, steam and animal strength are employed as powers. (3) The mechanical effect or advantage produced by a machine. Force or effect considered as resulting from the action of a machine.

Powers, Hiram, an American sculptor; born in Woodstock, Vt., July 29, 1805. In 1835 he went to Washington, where he executed the busts of several distinguished persons. Two years later he was enabled to go to Italy to study his art, and he resided in Florence till his death. There he produced his statue of "Eve," which excited the admiration of Thorwaldsen, and in 1843 the still more popular "Greek Slave," of which six copies in marble, with cast copies innumerable, were produced. Among the other works the chief were "Proserpine," "Il Penseroso," "California," "America," and busts of Washington for the State of Louisiana, of Calhoun for South Carolina, and Daniel Webster for Boston, as well as those of John Q. Adams, Andrew Jackson, Marshall, Van Buren, and other distinguished Americans. He died in Florence, Italy, June 27, 1873.

Powers, Horatio Nelson, an American poet; born in Amenia, N. Y., April 30, 1826. He died in Piermont, N. Y., Sept. 6, 1890.

Powers, Le Grand, an American statistician; born in Preston, N. Y., in 1874; was graduated at Iowa State University in 1872; commissioner of labor in Minnesota in 1891–1899; then became chief statistician of the 11th Census, in charge of agriculture. Among his books are "Minnesota Bu-

reau of Labor Biennial Reports" "Farmer Hayseed" (a reply to Coins' "Financial School"); etc.

Powhatan, an Indian chief; born about 1550; was the father of Pocahontas, who is celebrated in the colonial history of Virginia as the rescuer of John Smith. He died in April, 1618.

Powhatan, the name of an Indian confederacy, which at an early day lived on the E. shore of Virginia and a portion of Maryland. They at first numbered only seven tribes, but under the leadership of their chief, Powhatan, increased to 30. The English found them when forming the colony at Jamestown. Constant troubles betweeen the confederacy, the English, and the Iroquois, soon destroyed nearly all the Powhatan tribes, and after 1684 they were not recognized as a separate nation.

Poynter, Sir Edward John, an English painter; born in Paris, March 20, 1836. Among his chief pictures are "Perseus and Andromeda"; "More of More Hall and the Dragon"; "Zenobia Captive," and "A Roman Boat Race." He was elected an Associate in 1869 and a Royal Academician in 1876, was the first Slade Professor of Art at University College, London, and was director for art at South Kensington for some years. He was also the author of "Ten Lectures on Art" (1879). He became president of the Royal Academy and was knighted in 1896.

Præfect, a common name applicable to various Roman functionaries. The most important was the Præfectus urbi, or warden of the city, whose office existed at an early period of Roman history, but was revived under Augustus, with new and greatly altered and extended authority, including the powers necessary for the maintenance of peace and order in the city, and an extensive jurisdiction civil and criminal. The title is used for certain public officials in France. The American word "chief" seems to be its equivalent.

Prætor, originally the official title of the Consuls at Rome. When the patricians were compelled to acquiesce in the consulship being thrown open to the plebeians, they stipulated that a new curule magistrate should be appointed from the patricians exclusively, to act as supreme judge in the civil courts. On this magistrate the title of prætor was bestowed.

Prætorian Guard, a body of permanent troops, established by Augustus as Imperial Life Guards, in imitation of the bodyguard attached to the person of the Commander-in-Chief of a Roman army. The prætorian guards were kept up by successive emperors, and, being under special organization and enjoying several privileges, they became in time so powerful that they were able to raise and depose emperors at their will. They were reorganized by Septimius Severus, and were finally suppressed by Constantine the Great.

Pragmatic Sanction, a rescript or answer of the sovereign delivered by advice of his council to some college, order, or body of people, on any case of their community. Generally it is applied to an ordinance fixing the succession to a throne in a certain line. Thus, by the Pragmatic Sanction of Germany in 1439, the succession of the empire was made hereditary in the house of Austria.

PRAIRIE CHICKEN.

Prague, the capital of Bohemia, and the third largest city of Austria-Hungary; situated at the base and on the slope of the hills which skirt both sides of the isleted Moldau; 217 miles N. N. W. of Vienna and 118 S. S. E. of Dresden. It offers a highly picturesque appearance from the beauty of its site, and the numerous lofty towers (more than 70 in number) which

rise above the many noble palaces, public buildings, and bridges of the city. The fortifications have been gradually demolished since 1866. The royal Burg, on the Hradschin (240 feet), the ancient residence of the Dukes of Bohemia, dates mainly now from the 16th and 17th centuries, and has 440 rooms. Prague has, besides, numerous public gardens and walks in the suburbs, with several royal and noble parks open to the public in the vicinity of the city. The university had 10,000 students at the beginning of the 15th century; but subsequently it had a long period of inactivity. It received a new constitution in 1881, having now two coördinate sides or sections, one German and one Czech, with respectively 156 and 140 teachers, and 1,470 and 2,361 students. It possesses a library of 195,000 volumes and 3,800 manuscripts, a fine observatory, museums of zoölogy, and anatomy, a botanical garden, etc. The manufactures include machinery, chemicals, leather, cotton, linen, gloves, beer, spirits, etc. Prague is the great center of the commerce of Bohemia, and the seat of an important transit trade. Pop. 184,109.

Prairie, the name given by the early French settlers in America to extensive tracts of land, either level or rolling, destitute of trees, and covered with coarse tall grass, interspersed with numerous varieties of flowering plants.

Prairie Chicken, the popular name of the pinnated grouse of the United States. The neck of the male is furnished with tufts of 18 feathers, and is remarkable also for two loose, pendulous, wrinkled skins, which somewhat resemble an orange on inflation. The prairie hen is much prized for the table.

Prairie Dog. It is not even related to the dog, but is so called from the fancied resemblance of its cry to the bark of a small dog, whence it has been also called the barking squirrel. It is about a foot long, reddish-brown above, lighter beneath. Its habits are eminently social; it forms large communities on the prairies, each burrow having a little hillock at its entrance, and excavated passages connect the burrows, which are sometimes shared by the burrowing owl. The rattlesnake occasionally occupies a deserted burrow, and preys largely on the prairie dog.

PRAIRIE DOG.

Prairie State, Illinois. The face of the State is mostly a level tableland, elevated from 300 to 800 feet above the sea.

Prairie Wolf, or **Coyote,** the small wolf which is found on the prairies in North America. It is a cowardly animal, and only dangerous to man when in packs and pressed by hunger.

Pratt, Charles, an American philanthropist; born in Watertown, Mass., Oct. 2, 1830. He amassed a great fortune, took an intense interest in educational matters, and founded in Brooklyn the Pratt Industrial Institute. He died in New York city, May 4, 1891.

Pratt, John Francis, an American scientist; born in Pomfret, Vt., June 18, 1848; was graduated at Dartmouth College in 1871; then studied civil engineering. In 1871 he became connected with the United States Coast and Geodetic Survey, in which he was made an assistant in 1884; commanded the United States schooner "Yukon" in Puget Sound and the Straits of Fuca, Wash., in 1884–1890; led the expedition to Chilcoot, Chilkat, Skagway, and Dyea to determine the S. E. boundary of Alaska; conducted an expedition to the E. side of Bering Sea and the lower portion of the Yukon river in 1898; and served on numerous other important missions.

Prawn, in zoölogy, Palæmon serratus, and, less properly, any other species of the genus. Its ordinary

length is about four inches; color bright gray, spotted and lined with darker purplish gray. It is a favorite article of food, and is found in vast numbers in the North Atlantic.

Praxiteles, a celebrated Greek sculptor; born about 360 B. C., who executed several fine statues in bronze and marble of Bacchus, a satyr, Venus, and Apollo. An ancient copy of one of his works, the "Apollo Sauroctonos," is the only example extant. He excelled by the grace, tenderness, and finish of his works. He was esteemed as second to Phidias only. He died about 280 B. C.

Prayer, a universally acknowledged part of the worship due to God; not merely petition, but, according to the New Testament models and Christian usage, praise, adoration, and thankful acknowledgment of mercies received. Nor is any truth more indisputably taught in the Bible, or more frequently brought into view, both in the Old and New Testament, than that God is the hearer of prayer.

Praying Machine, Praying Mill, or **Praying Wheel,** an apparatus used in Tibet, and other parts of the East, as a mechanical aid to prayer. They are of various forms, the commonest being a cylinder or barrel of pasteboard fixed on an axle, and inscribed with prayers. The devout give the barrel a turn, and each revolution counts as an utterance of the prayer or prayers inscribed. It is common enough to see them fixed in the bed of a running stream, as they are then set in motion by the water, and go on praying night and day, to the special benefit of the person who has placed them there. The Tartars also suspend them over their domestic hearths, that they may be set in motion by the curent of cool air from the opening in the tent, and so twirl for the peace and prosperity of the family.

Preaching, the act of preaching; a public religious discourse. The modern system of preaching was unknown in the early Church. The general mode then was for the priest to read portions of the Old or New Testament, and explain or enforce the precepts which they contained. About the 13th century, the scholastic divines directed their chief attention to the study of the sacred Scriptures, and were hence called Bible divines, and honored with the pompous titles of profound, sublime, wonderful, seraphic, angelic doctors. They introduced a new and artificial mode of preaching, called declaring. Before this time, the clergy generally adopted postulating, or expounding a large portion of Scripture, sentence by sentence. By the new method the preacher read a text out of some book and chapter of the Old or New Testament, dividing it into several parts and expounding them; and, generally, the more numerous the divisions and sub-divisions, the better and more highly was he esteemed. The opposition to this textual mode of preaching continued for upward of a century, but at length it came generally to prevail.

Preble, Edward, an American naval officer; born in Portland, Me., Aug. 15, 1761. Early in 1803 he was made commander of the "Constitution"; and in June of that year was placed in command of a fleet sent against Tripoli. He greatly distinguished himself in causing that country to sue for peace, a feat accomplished by a number of skillful bombardments. He returned to the United States and received through Congress the thanks of the nation and a gold medal. He died in Portland, Me., Aug. 25, 1807.

Precedence, the order in which men and women follow each other according to rank or dignity in a State procession or on other public occasions. There is no American law dealing with precedence, tact and courtesy guiding the procedure on public occasions, but in Europe it is a subject of very grave importance, and moss-grown with law and custom.

Precedent, a judicial decision, interlocutory or final, which serves as a rule for future determinations in similar cases; also a form of proceeding to be followed in similar cases.

Precentor, an officer in a cathedral, formerly sometimes called chaunter, and ranking in dignity next to the dean.

Precession of the Equinoxes, in astronomy, the going forward of the equinoxes. The arrival of the sun at the point Aries a little earlier than he might be expected to reach it was first observed by Hipparchus about 150

B. C. The earth's rotation simply causes the points at which the earth's equator intersects the plane of the ecliptic to move slowly in a direction opposite to that in which the earth rotates. This is what is denominated the precession of the equinoxes. It is generally associated with the sun, but the moon is twice as potent in producing it; owing to her comparative nearness to the earth she is able to produce a greater differential effect on the nearer and more remote portions of our planet. The annual motion of the first point of Aries is about 50″, and about 25,867 years will be required for the entire revolution. It has been supposed that the precession of the equinoxes may have had some influence in producing the Glacial Period.

Precious Metals, gold and silver, so called on account of their value.

Precious Opal, a very pure variety of opal, exhibiting a play of bright and contrasting colors. The most durable are obtained from the mines of Czerwenitza, Hungary; those from Mexico, when first found, surpass them, however, in vividness of color.

Predestination, the act of ordaining, decreeing, or determining events beforehand. In theology, foreordination.

Preemption, the act or right of buying before others. Also, the right of a settler on lands to purchase in preference to others, when the land is sold.

Preexistence, existence previous to or before something else. Also, existence in a previous state; existence of the soul previous to its union with the body. Preëxistence was a doctrine of the Pythagoreans, and several others of the old philosophers, and is still found in many Eastern religions.

Prelate, an ecclesiastical dignitary of the highest order, having authority over the lower clergy, as an archbishop, bishop, or patriarch; a dignitary of the church.

Prentice, George Denison, an American journalist; born in Preston, Conn., Dec., 18, 1802; became editor of the Louisville "Journal," 1830, and held that post till his death, making the paper famous for satiric wit and exuberant fun. He died in Louisville, Ky., Jan. 22, 1870.

Prentiss, Benjamin Mayberry, an American military officer; born in Belleville, Va. (now W. Va.), Nov. 23, 1819. He removed to Illinois in 1842, and served in the Mexican War as a captain of volunteers. At the beginning of the Civil War he entered the Union Army and was made Brigadier-General of volunteers. He was taken prisoner at Shiloh, May 6, 1862; was promoted Major-General in the same year; defeated Generals Holmes and Price, who attacked him at Helena, Ark., July 4, 1863; resigned his commission Oct. 28, 1863, and died in 1901.

Prentiss, Mrs. Elizabeth (Payson), an American writer of fiction; born in Portland, Me., Oct. 26, 1818. She died in Dorset, Vt., Aug. 13, 1878.

Prentiss, Seargent Smith, an American orator; born in Portland, Me., Sept. 30, 1808; studied law, and became, about 1827, a resident of Vicksburg, Miss., where he practised with success. He was elected to Congress by the Whigs in 1837. His manner of speaking was at once natural and dramatic, and he had a high reputation as an orator, and as an advocate in jury trials was equal or superior to any lawyer in the Southwestern States. He died near Natchez, Miss., July 1, 1850.

Preposition, a part of speech, so named because originally prefixed to the verb, in order to modify its meaning. Prepositions are either simple or compound. Simple prepositions are at, by, for, from, in, on, out, to, up, with; compound prepositions are across, after (a comparative from of), against, above, about, along, amid, amidst, among, athwart, but, into, over, through, toward, until, unto, within, without. The prepositions concerning, during, except, notwithstanding, outtake, etc., arise out of a participal construction.

Pre-Raphaelism, an English school of painting, which has in recent years sprung into existence, and has been thus named, in accordance with an erroneous idea, that its earliest members were mainly anxious to imitate the mannerisms of the artists who painted prior to the time of Raphael.

Presbyter, an elder, or a person advanced in years who had authority

in the early Christian Church (I Peter v: 1). Also, in the Presbyterian Church, a member of a presbytery; specifically, a minister.

Presbyterian Church, a name applied to those Christian denominations, who hold that there is no order in the Church as established by Christ and His apostles superior to that of presbyters, and who vest church government in presbyteries, constituted of ministers and elders, possessed of equal powers thus without superiority among themselves. Presbyterianism does not recognize the term bishop as the superior of the presbytery, because these two names or titles in the New Testament, are used interchangeably of the same persons. Presbyterians hold that the authority of their ministers is derived from the Holy Spirit, which is symbolized by the imposition of the hands of presbytery collectively. They affirm that all Christian ministers, being ambassadors of Christ, are equal by their commission. The congregation elects its own minister and elders, and also its deacons and trusteees — the former of the last two, takes charge of the charities of the church, and the latter of its temporal or financial affairs. The session, consisting of the minister and elders, has the spiritual oversight of the church members. The Presbytery is constituted by ministers and elders in equal numbers. A congregation for the time without a pastor, can be represented in the presbytery by an elder. An appeal may be made to the presbytery from congregations or sessions. A synod consists of a number of presbyteries within defined boundaries. The General Assembly is the highest court of the church, and consists of representatives from all the presbyteries, each minister is accompanied by an elder from the same presbytery.

The first Presbyterian Church in modern times was founded in Geneva by John Calvin, about 1541; and the constitution and doctrines were thence introduced, with some modifications, into Scotland by John Knox, about 1560, though the Presbyterian was not legally recognized as the national form of church government till 1592.

The first Presbyterians in America were emigrants from the British Isles, and the first Presbyterian church in America was founded in the colony of Massachusetts in 1629. It was the outgrowth of a Presbyterian congregation that landed there in 1625. This movement was projected by Presbyterian leaders in the S. of England and also in London. It was designed to be a colonization on a higher principle than the desire for gain.

The church now has five theological seminaries. A revision of the Confession was commenced in 1891 and is now in progress. It is also proposed to formulate a creed which shall express the doctrine of all the branches of the church. There are several branches which virtually hold the polity of the Presbyterian Church in the United States, each having its own theological seminaries and colleges, such as the Presbyterian Churches Northern and Southern, the Cumberland, Reformed, the United Presbyterian, the Reformed Dutch and German, etc. The total of all 12 bodies of Presbyterians in the United States for 1900, according to the "Independent," was: Ministers, 12,216; churches, 14,913; members, 1,575,698. The Presbyterian Church in Canada is strong and prosperous, with six theological colleges. In 1890 there were above 800 ministers, and 140,000 communicants. In the Australasia colonies Presbyterianism is also vigorous. In the Cape Colony and minor colonies Presbyterianism is also represented.

Presbytery, in the Presbyterian Church, a court of judicature above the session and beneath the synod. It is composed of all the ministers of an assigned district, with a representative ruling elder from each. These elders hold office for six months, and are capable of reëlection. Professors of theology are members of that presbytery in which the college is situated. The moderator opens and closes each meeting with prayer. The functions of the court are executive, not legislative. The presbytery supervises all the congregations within its bounds, hears appeals from the decisions of sessions, examines candidates for the ministry, licenses probationers, and ordains ministers by laying on of hands (I Tim. iv: 14). Appeal lies from it to the synod.

Prescott, William Hickling, an American historian; born in Salem,

Mass., May 4, 1796, the son of a distinguished lawyer and statesman, and grandson of Col. William Prescott, an officer of the Independence War. He entered Harvard College in 1811, and graduated in 1814. While at college he had the misfortune to lose by an accident, the sight of one of his eyes, while the other became so weakened as to deter him from any profession or pursuit in which strong eyesight was indispensable. His first literary works were a series of critical papers in the "North American Reveiw." These were followed in 1838 by his first great work, a history of the reign of Ferdinand and Isabella, produced after ten years of the most arduous labor. It was received with the utmost enthusiasm both in America and England; while Germany, France, and Spain acknowledged the new historian by translating his work into their respective languages; and the Spanish capital elected him a member of her Royal Academy of History.

Stimulated by success, and with his skill considerably increased by practice and experience, Prescott set about the composition of "The Conquest of Mexico," which he published in 1843, and four years later he gave to the world "The Conquest of Peru." These elaborate and charmingly written works, like their predecessor, were received in both hemispheres with immense applause. He later began the composition of what he intended to be the greatest achievement of his latter years, "The History of Philip II." Of this work two volumes appeared in 1855, and a third in 1859; and the world was looking forward to the completion of the task, when he was suddenly attacked by paralysis. He died in Boston, Jan. 28, 1859.

Prescription, in law, a claim or title to a thing by virtue of immemorial use, enjoyment, the right or title acquired by such use or by possession had during the time, and in the manner fixed by law, as a right of way, of common, or the like.

Presentment, in law, a very comprehensive term; including not only presentments properly so called, but also inquisitions of office and indictments by a grand jury. Properly speaking, it is the notice taken by a grand jury of any offense from their own knowledge or observation, without any indictment laid before them at the suit of the crown; as the presentment of a nuisance, a libel, and the like; upon which the officer of the court must afterward frame an indictment, before the party presented can be put to answer it. In commerce, the presenting a bill of exchange to the drawee for acceptance or to the acceptor for payment.

President, The, an American frigate, the flagship of Capt. John Rodgers in the early part of the War of 1812. It was a sister ship of the "Constitution" and the "United States." It defeated the British ship "Endymion" on Jan. 15, 1815, but was obliged to surrender to her consorts. The name also of an American steamer which sailed from New York for Liverpool, March 21, 1841. It was sighted on the 24th, but was never seen again.

President of the United States, the chief executive of the government. He is Commander-in-Chief of the army and navy of the country, and has the nomination of most of the executive officers of the government, besides a large number of judicial and administrative functionaries. He is elected for a term of four years, and is eligible for any number of reëlections, though, in conformity with the precedent set by George Washington, no President has yet been elected more than twice. The President has a veto power, and unlimited pardoning prerogative as to offenders against National laws. His salary is $50,000 a year, and his residence, during his presidency, is the White House in Washington. He is elected by an electoral college. In case of his death or total disability the functions of the office devolve on the Vice-President, who is elected coincidently with the President, and is the presiding officer of the Senate.

Presidential Succession, the order in which a vacancy in the office of the President of the United States can be filled pending a new election. The 49th Congress passed a measure entitled "An Act to provide for the performance of the duties of the office of President in the case of removal, death, resignation, or inability both of the President and Vice-President."

According to its provisions the presidential succession is arranged as follows: Following the Vice-President, the Secretary of State, the Secretary of the Treasury, the Secretary of War, the Attorney-General, the Postmaster-General, the Secretary of the Navy, and the Secretary of the Interior.

Press Clipping Bureau, an office for supplying newspaper and magazine clippings on any required subjects to any person desiring them. There are several such bureaus in New York, Chicago, and other large cities, doing an extensive business in this novel line.

Press Gang, the name given in England to a detachment of seamen who (under a naval officer) were empowered, in time of war, to lay hold of seafaring men and compel them to serve in the king's ships.

Preston, Harriet Waters, an American author; born in Danvers, Mass., about 1843. At an early age she became noted as a linguist, and afterward achieved a brilliant reputation as a translator from the Latin and Provençal languages, and as an essayist. Besides her translations she has published several bright original books.

Preston, Mrs. Margaret (Junkin), an American author; born in Philadelphia about 1825; was a resident of Lexington, Va., and later of Baltimore, Md. Her writings deal chiefly with the period of the Civil War. She died in 1897.

Preston, William, an American diplomatist; born near Louisville, Ky., Oct. 16, 1816; practised law in Louisville; was sent as minister to Spain in 1858; was a member of Congress 1852–1855; joined the Confederates in 1861; and was made a Brigadier-General. He died in Lexington, Ky., Sept. 21, 1887.

Presumption, in law, in the absence of direct evidence that which comes nearest to the proof of a fact.

Pretender, one who made claim to a throne under a pretense of right (as Perkin Warbeck, Lambert Simnel, in English history); specially applied to the son and grandson of James II., the heirs of the House of Stuart, who laid claim to the throne of England, from which they had been excluded by Parliament in 1688. The former, often termed the Old Pretender, died in 1776; his son, Charles Edward Stuart, the Young Pretender, in 1788.

Pretoria, the capital of the former South African Republic (Transvaal), 980 miles from Cape Town, and 285 miles W. of Lorenzo Marques, on Delagoa Bay, to which a railway was opened in 1895. Pretoria was founded in 1855 by the Boer leader Pretorius, has broad streets, and pure water. It owes its prosperity chiefly to the gold mines at Johannesburg, about 30 miles distant.

Prevost-Paradol, Lucien Anatole, a French writer and diplomatist; born in Paris, France, Aug. 8, 1829. In 1851 he obtained from the Academie Francoise the prize for eloquence, for his "Eulogy on Bernardin de Saint Pierre." His literary and political essays are among the soundest, the most acute, the most scholarly, and the most elegant that have proceeded from the French journalists of the empire. In 1870 he came to the United States as minister plenipotentiary, and he was at Washington only a few days when he committed suicide, Aug. 11, 1870.

Priam, a King of Phrygia, and the last sovereign of Troy. Soon after his accession, the discovery of a gold mine in his kingdom enabled him to enlarge and beautify his capital, strengthen its defenses, and raise a powerful army. Under his reign Troy was regarded as the largest, richest, and most magnificent city, and himself as the most powerful monarch in Lesser Asia. The perfidy of his son Paris in eloping with Helen led to the long and fatal war, which, after enduring for 10 years, terminated in the entire overthrow of the state, the destruction of Illium, the death of most of his sons, and his own murder by the ruthless Pyrrhus. Priam's death occurred about 1184 B. C.

Pribilof Islands, a group of islands on the coast of Alaska, in Bering Sea. The largest are St. Paul, St. George, Walrus, and Beaver Islands. They are frequented by numbers of fur seals. The natives are Aleutians.

Price, Richard, an English philosopher; born in Tynton, Glamorganshire, Feb. 22, 1723. He was a Dissenting minister, and was pastor of

a congregation at Hackney. He was the friend of Benjamin Franklin, and sympathized warmly with the American colonists. His tables of vital statistics and calculations of expectancy of life were the basis of modern annuities and life insurance; his economic and financial writings were of a high order, and the younger Pitt consulted him on finance. He wrote "The American Revolution and the Means of Rendering It a Benefit to the World," etc. He died April 19, 1791.

Price, Sterling, an American military officer; born in Prince Edward co., Va., Sept. 11, 1809; received a collegiate education, and settled in Missouri in 1831; was elected to Congress in 1844; served in the Mexican War as colonel and Brigadier-General of volunteers; was military governor of Chihuahua in 1847; governor of Missouri in 1853–1857, and president of the State Convention in February, 1861. When the Civil War broke out he joined the Confederate army, and became Major-General of Missouri militia in May, 1861. He fought through many campaigns and greatly distinguished himself; was commander of the Department of the West in 1862, and afterward of the districts of Tennessee and Trans-Mississippi. At the close of the war he went to Mexico, but in 1866 returned to Missouri. He died in St. Louis, Mo., Sept. 29, 1867.

Prickly Ash, a name given to several prickly shrubs of the United States. They have an aromatic and pungent bark, which from being used as a remedy for toothache gains them the name of toothache tree.

Prickly Heat, a skin disease, characterized by minute papulæ formed by the hyperæmia of the sweat follicles. Few Caucasian residents of the tropics escape it when they are exposed to the sun. It is not in the least dangerous.

Prickly Pear, otherwise called the Indian fig. It is a fleshy and succulent plant, destitute of leaves, covered with clusters of spines, and consisting of flattened joints inserted upon each other. The fruit is purplish in color, covered with fine prickles, and edible. The flower is large and yellow. It is a native of the tropical parts of America. It is easily propagated, and in some countries is used as a hedge plant. It attains a height of seven or eight feet.

Pride of China (also called pride of India and bead tree), a handsome tree a native of India, naturalized in the Southern States of the American Union. It grows rapidly, has large bunches of flowers, and enormous quantities of small fruit. A decoction of the bark of its root is used as a vermifuge.

Priest, one who in any religion performs the sacred rites and, more or less, intervenes between the worshipper and his God, especially by offering sacrifice.

In Judaism, a descendant of Aaron, and therefore one of the sacred caste. The Jewish priests filled all the important offices in connection, first with the tabernacle and then with the temple worship. In the Protestant Episcopal Church, a clergyman in priest's orders, as distinguished from a deacon. In the Roman Church, a cleric who has received the third grade in holy orders, and who is thereby empowered to "offer, bless, rule, preach, and baptize."

Priest, Josiah, an American author; born in New York, about 1790. He was an unschooled man, a harness-maker by trade; but published several books, some of which became very popular. Among them were, "Stories of the Revolution," and "Slavery in the Light of History and Scripture." He died about 1850.

Priestley, Joseph, an English natural philosopher; born in Fieldhead, England, March 13, 1733. His first publication was the "History and Present State of Electricity," which procured his election into the Royal Society, and the degree of doctor of laws from Edinburgh. It was here also that his political opinions were first manifested, in an "Essay on Government." Soon after this he went to Leeds, where he made those important discoveries with regard to the properties of fixed air, for which he received the Copley medal of the Royal Society in 1772. In 1776 he communicated to the same learned body his observations on respiration, in which he first experimentally ascertained that the air parts with its oxygen to the blood as it passes through the lungs. He next re-

moved to Birmingham, where he became once more minister of an Independent congregation, and occupied himself in his "History of the Corruptions of Christianity," writing, also, in support of the claims of the Dissenters for a repeal of the test acts. But it was the French Revolution that afforded him the widest field, and he did not fail to display his warm sympathy with it. This excited the indignation of the High Church party; and in the riots which took place in July, 1791, his house, library, manuscripts, and apparatus were committed to the flames by the mob, and he was exposed to great personal danger. After this he removed to Hackney, where he succeeded Dr. Price; but, in 1794, compelled by incessant persecutions to fly his intolerant country, came to the United States and took up his abode at Northumberland, Pa. His works extend to between 70 and 80 volumes. As a natural philosopher, his fame principally rests on his pneumatic inquiries. He died in Northumberland, Pa., Feb. 6, 1804.

Prima Donna, the first female singer in an opera.

Primate, the chief ecclesiastic in certain churches. The Archbishop of York is called the Primate of England, the Archbishop of Canterbury the Primate of All England, and the Roman Catholic Archbishop of Baltimore the Primate of the United States.

Primates, the first and chief of Linnæus' orders of the class Mammalia. He included under it four genera: Homo (one species, five varieties), Simia (21 species), Lemur, (three species), and Vespertilio (seven species). Huxley divides it into three suborders: (1) Anthropidæ, (2) Similadæ (apes and monkeys), and (3) Lemuridæ.

Prime, Samuel Irenæus, an American editor; born in Ballston, N. Y., Nov. 4, 1812; was first a minister in the Presbyterian Church. About 1840 he became editor of the New York "Observer," and remained in charge till his death. He was the author of over 40 volumes, the best known being, "Travels in Europe and the East," "Letters from Switzerland," "The Alhambra and the Kremlin," "Life of Samuel F. B. Morse." He died in Manchester, Vt., July 18, 1885.

Prime, William Cowper, an American author; born in Cambridge, N. Y., Oct. 31, 1825. He has written "Owl Creek Letters," "Coins, Medals, and Seals," "The Holy Cross," "Pottery and Porcelain of all Times and Nations," etc. He edited "McClellan's Own Story," with biography and has done other excellent literary work.

Prime Meridian, that meridian from which longitude is measured; in the United States the meridian of Washington.

Prime Minister, a British officer of State, who at the summons of the sovereign has succeeded in forming an administration, of which he is the head, and which may be named after him. Though each member of the ministry administers his own department independently of his colleagues, all important departmental matters are submitted to him, the most important being brought before the whole ministry, and no appointment of moment is made or recommended to the crown without his knowledge and concurrence. His own patronage is very extensive. No cabinet officer in the United States possesses similar powers.

Primitive Methodists, a section of the Wesleyan community which arose in Staffordshire, England, under the leadership of Hugh Bourne (1792–1852). Having held camp meetings like those in the United States, he was censured for it by the English Wesleyan Conference in 1807, and, seceding, formed a new connection. In doctrine the Primitive Methodists agree with the Wesleyans. In 1900 there were reported in the United States 92 churches, 65 ministers, and 6,470 members.

Primogeniture, the right, system, or rule under which in cases of intestacy, the eldest son of a family succeeds to the real estate of his father to the absolute exclusion of the younger sons and daughters. Primogeniture no longer carries with it any legal advantage over younger children in the United States.

Primrose, a well known flower, common in copses, pastures, hedge-banks, and woods, or by the side of streams. Its rootstock is emetic.

Prince. (1) One who holds the first, or chief place, or rank; a sovereign; (2) The ruler or sovereign of a state or territory which he holds of a superior, to whom he owes certain services. (3) The son of a sovereign, or the issue of the royal family; as, the princes of the blood. In British heraldic language, the title of prince belongs to dukes, marquises, and earls of Great Britain, but in ordinary use it is confined to members of the royal family. The only case in which it is a territorial title is that of the Prince of Wales, the official title of the heir-apparent to the throne. On the Continent of Europe the title of prince is borne by members of families not immediately connected with any royal house. It is frequently borne by persons who although legally entitled to it are in fact without means of support, and it can be purchased in some European countries for a comparatively small sum of money. (4) The head or chief of any body of men; one who is at the head of any class or profession, or who is preëminent in anything; as, a merchant prince.

Prince, Le Baron Bradford, an American lawyer; born in Flushing, L. I., N. Y., July 3, 1840; was chief-justice of New Mexico in 1878–1882; territorial governor of New Mexico in 1889–1893; president of the International Mining Congress in 1897–1898 and in 1900–1901; and vice-president of the National Irrigation Conference in 1901. He is the owner of the largest collection of American stone idols in the world. His publications include various books and pamphlets on archæology, political economy, and history.

Prince Edward Island, an island forming a province of the Dominion of Canada, in the Gulf of St. Lawrence, and separated by Northumberland Strait from New Brunswick on the E. and Nova Scotia on the S.; greatest length, from E. to W., about 130 miles; breadth, varying from 4 to 34 miles; area, about 2,134 square miles, or 1,365,760 acres, of which over 1,000,000 are under cultivation. Pop. (1901) 103,259. The coast line presents a remarkable succession of large bays and projecting headlands. The island is naturally divided into three peninsulas, and the whole is eminently agricultural and pastoral, the forests now being of comparatively limited extent. The climate is mild; winter, though long and cold, is free from damp, unwholesome chills; and summer, without being oppressively hot, is fitted to promote the growth of all the ordinary cereals. Sheep, cattle, and horses are reared in numbers; cod, mackerel, herring, oysters, and lobsters form the most productive part of the fisheries. The manufactures are chiefly confined to linen and flannels for domestic use; there are also several tanneries, and shipbuilding is carried on to a considerable extent. The exports consist of timber, agricultural produce, and live stock; the imports of drygoods, hardware, cordage, iron, etc. A railway runs from one end of the island to the other. The capital is Charlottetown. Pop. (1901) 12,080. The public affairs of the island are administered by a lieutenant-governor nominated by the crown, who appoints an executive council of nine members. There is also a legislative council of 13, and a House of Assembly of 30 members, both chosen by the people. There is an excellent educational system, the elementary schools being free. The island is supposed to have been discovered by Cabot. It was first colonized by France, captured by Great Britain in 1745, restored and recaptured, and finally in 1873 was admitted to the Dominion of Canada.

Princes Islands, a beautiful group of nine islets near the E. end of the Sea of Marmora, about 10 miles S. E. of Constantinople, the largest being called Prinkipo. They are a favorite summer resort of the Constantinople Greeks, and in old times were frequently a place of exile for those who were in disfavor at the Byzantine court.

Princeton Theological Seminary, an educational institution in Princeton, N. J.; founded in 1812, under the auspices of the Presbyterian Church.

Princeton University, an educational institution in Princeton, N. J. It was founded Oct. 22, 1746, by a charter given under the seal of the Province of New Jersey, "for the instruction of youth in the learned languages and in the liberal arts and sciences." After the Civil War the college began

to make rapid progress. The number of students increased, the faculty was enlarged, and in 1872 the Chancellor Green Library (named in honor of its donor) was erected. Up to this time the course of instruction had led exclusively to the degree of Bachelor of Arts; but in 1873 the John C. Green School of Science was added, and in 1875 the Department of Civil Engineering was also created. In 1889 the Department of Electrical Engineering was founded, and in 1901 the Graduate School was formerly established, Prof. Andrew West being appointed its dean.

On Oct. 22, 1896, the 150th anniversary of the signing of the first charter, the title of Princeton University was assumed. In 1897 the Chancellor Green Library was connected with a new library building, having a capacity to shelve 1,200,000 volumes. The total number of buildings now belonging to the university is over 40.

In 1902 there were 102 instructors, 1,340 students, 8,430 graduates, and 171,256 bound volumes in the library.

Printing, the art of producing impressions from characters or figures on paper or any other substance. Printing is of comparatively modern origin, only 400 years having elapsed since the first book was issued from the press; yet we have proof that the principles on which it was ultimately developed existed among the ancient Assyrian nations. Printing from movable types was, according to Professor Douglas, probably practised in China as early as the 12th or 13th century, as there are Korean books printed from movable clay or wooden types in 1317. The great discovery was that of forming every letter or character of the alphabet separately, so as to be capable of rearrangement and forming in succession the pages of a work, thereby avoiding the labor of cutting new blocks of types for every page. The credit of inventing this simple yet marvelous art is contested by the Dutch and Germans. Printing was brought to England in 1476 or 1477 by William Caxton. The first printing press set up in America was introduced by the Viceroy of Mexico, Antonio de Mendoza, and the first book printed by it in the New World was "The Ladder de S. Juan Climaco" (1536). The earliest press in the British-American colonies was brought over for Harvard College in 1638, and was set up by Stephen Daye. The "Bay Psalm Book" (1640) was its first important work; but in 1639 it printed the "Freeman's Oath" and an almanac. In Philadelphia a press was set up in 1685, in New York in 1693.

In July, 1902, the Census Bureau issued a report on printing and publishing which shows a capital of $292,517,072 invested in the 22,312 establishments reporting for the industry. The value of the products is returned at $347,055,050, to produce which involved an outlay of $35,090,719 for salaries of officials, clerks, etc.; $84,249,889 for wages; $55,897,529 for miscellaneous expenses and $86,856,290 for material used.

In 1890 the increase in the number of all publications was greater than the increase in population, but in 1900 the increase in number of publications and in population was about the same. During the decade there was an increase in the proportion of daily, triweekly, semi-weekly and monthly publications; a marked decline in the proportion of publications devoted to special topics and an advance only in the classes devoted to news topics and to general reading. The total circulation per issue of dailies was enough to supply one for every five inhabitants. The total circulation per issue of weeklies and monthlies was one to two inhabitants. Publications printed in English formed 94.3 per cent. of all publications reporting for 1900, showing a considerable increase over the corresponding figures for the preceding decade. One and one-quarter billion pounds of paper were used during the census year. Of this amount 77.6 per cent. was consumed for newspapers, 16.4 per cent. for books and periodicals and 6 per cent. for job printing, but the proportionate cost was 58.7 per cent., 24.7 per cent., and 16.6 per cent., respectively. Daily evening newspapers increased more rapidly than daily morning papers. In 1890 there were two evening papers to every morning paper; in 1900 the proportion was about three to one.

The 19th was a century of wonderful achievement in every branch of printing. The Fourdrinier paper-making machine, the Bruce type-caster, the

linotype type-casting and type-setting machine, and other mechanical type-setters of merit; composition ink rollers, the cylinder press, the web press, and mechanisms of many kinds for the rapid printing of the smallest label or the largest sheet in black or many colors; machines for folding, sewing, and binding books; the arts of stereotype, electrotype, and photo-engraving — all these are its outgrowth, and the more important have been invented or made practicable within the memory of men now living. It is a summary of which the printing trade may be proud. Printing was never done better and never done worse. It has never been furnished in so large a quantity at so small a price. For one or more cents can be had a newspaper with more reading matter than would fill a stout octavo volume. Yet books are made and sold in limited editions to eager subscribers at prices ranging from $5 to $50 a volume. William Morris maintained that printing had gone steadily from bad to worse till he revived its best features. Many publishers maintain, with more reason, that books of real value for instruction or amusement were never better fitted than they now are for usefulness to all classes of readers.

Prison, a place of detention for persons convicted of crime. The most advanced examples of prison discipline and construction are to be found in the United States.

In some of the Southern States prisoners are leased out to the highest bidders for the term of their sentences; but this system, which condemns the convicts to a slavery that is not modified even by considerations arising from personal ownership, is gradually being abandoned. The first place of detention for juvenile delinquents was opened at New York in 1825; the first reformatories on the cottage or family system were established in Ohio — for boys at Lancaster in 1858, for girls at Delaware in 1878.

Prisoners of War, those who are captured from the enemy during naval or military operations. In ancient times the treatment of prisoners of war was very severe. In the Greek wars it was no uncommon thing to put the whole adult male population of a conquered state to the sword, while the women and children were enslaved. Though the putting to death of prisoners became less frequent, they and their families were commonly reduced to slavery to as recent a period as the 13th century. The act of Napoleon in putting to death the Turkish prisoners of war at Jaffa in 1799 was universally condemned, and is probably the last instance of such barbarity. By degrees the more humane custom of exchanging prisoners came into practice, those not exchanged being kept in confinement. The inhuman treatment of American prisoners by the British in the War for Independence will never be forgotten by Americans. In the American Civil War Union prisoners were cruelly done to death at Andersonville, Salisbury, Libby, Belle Isle and other places. In the Spanish-American War of 1898, the United States government sent the surrendered Spanish army of Santiago to Spain at its own expense.

Privateer, a ship owned by a private individual, which under government permission, expressed by a letter of marque, makes war on the shipping of a hostile power. To make war on an enemy without this commission, or on the shipping of a nation not specified in it, is piracy. At the American Revolution the new republic fully realized the advantage of its position in preying on the mercantile marine of Great Britain; and in the War of 1812 British commerce suffered severely at the hands of American privateers, of which it was computed that some 250 were afloat. During the American Civil War the Confederate States offered letters of marque to persons of all countries, but no admittedly foreign vessels were so commissioned. During the same period the Congress of the United States empowered the President to grant commissions to privateers, but none such were granted. The Confederate cruisers were at first regarded in the North as mere pirates; and the "Alabama Claims" originated in the charge against Great Britain of allowing the departure of privateers from British ports, where they were fitted out illegally. The charge was fully sustained, it being shown before the Geneva Tribunal that the Alabama and other so-called Confederate ships were really British.

Privet, a genus of plants containing a number of species of shrubs and small trees with opposite leaves, which are simple and entire at the margin; the flowers small, white, and in terminal panicles. Common privet is a shrub growing in bushy places and about the borders of woods in the middle and S. of Europe, and now also naturalized in some parts of North America.

Privileged Witnesses, witnesses who are not obliged to testify as to certain things, as lawyers in relation to their dealings with their clients, and officers of State as to State secrets; also, by statute, in some instances, clergymen and physicians are placed in the same category, so far as concerns information received by them professionally.

Privy Council, in English law, the principal council of the sovereign, consisting of members chosen at his or her pleasure. It is presided over by the Lord President of the Council, who has precedence next after the Lord Chancellor. Members of the privy council are addressed as Right Honorable.

The office of a privy councilor is now confined to advising the sovereign in the discharge of executive, legislative, and judicial duties.

Privy Seal, the seal used in England to be appended to grants which are afterward to pass the great seal, and to documents of minor importance, which do not require to pass the great seal.

Prize, that which is taken from an enemy in war; that which is seized by fighting, especially a ship, with the goods contained in her; any description of goods or property seized by force as spoil or plunder.

Prize Court, a court established to adjudicate on prizes captured at sea. In the United States, the United States District Courts have jurisdiction both as instance and prize courts.

Prize Money, money paid to the captors of a ship or place where booty has been obtained, in certain proportions according to rank, the money being realized by the sale of the booty.

Probate, in law, the official proof of a will. This is done either in common form, which is upon the oath of the executor before the judge of the probate court; or per testes (by witnesses), in some solemn form of law, in case the validity of the will is disputed.

Probate Court, a court of record established to exercise jurisdiction and authority in relation to probate of wills and letters of administration, and to hear and determine all questions relating to matters and causes testamentary. In New York it is called the "Surrogate's Court"; in Pennsylvania the "Orphans' Court."

Probationer, one who is in a state of probation or trial, so that he may give proof of his qualifications for a certain position, place, or state.

Proboscis Monkey, or **Kahau,** a native of Borneo, distinguished particularly by its elongated nose, its shortened thumbs, and its elongated tail. The general color is a lightish red. These monkeys are arboreal in habits, and appear to frequent the neighborhood of streams and rivers, congregating in troops.

Probus, Marcus Aurelius, a Roman emperor; born in Sirmium, Pannonia. By the Emperor Tacitus he was appointed governor of the Asiatic possessions of Rome; and such was the zealous attachment evinced for him by his soldiers that on the death of Tacitus they forced him to assume the purple; and, his rival Florianus having been removed, Probus was enthusiastically hailed emperor by all classes (A. D. 276). His brief reign was signalized by brilliant and important successes; the Germans were driven out of Gaul, and the barbarians from the Rhætian, Pannonian, and Thracian frontiers; and Persia was forced to agree to a humiliating peace. The external security of the empire being established, Probus devoted himself to the development of its internal resources. After a short reign he was murdered in a military insurrection in 282 A. D.

Procedure, Civil, the method of proceeding in a civil suit throughout its various stages.

Process, in anatomy, an enlargement, such as the cygomatic process of the temporal bone, the vermiform process of the cerebellum, etc. In law, a term applied to the whole course of

proceedings in a cause, real or personal, civil or criminal, from the original writ to the end of the suit; properly, the summons citing the party affected to appear in court at the return of the original writ.

Procession, the act or state of proceeding or issuing forth or from. Also a train of persons marching on foot, or riding on horseback or in vehicles with ceremonious solemnity.

Proclamation, a public notice made by a ruler or chief magistrate to the people, concerning any matter which he thinks fit to give notice about. In the United States the President issues proclamations as to treaties, days of thanksgiving, admission of new States, etc.; likewise governors of States and mayors of cities for special purposes.

Proconsul, in Roman antiquities, an officer who, though not actually holding the office of consul, exercised in some particular locality all the powers of a consul.

Procopius, an eminent Greek historian of the 6th century, the leading authority for Justinian's reign; born in Cæsarea, Palestine. Of his writings we have the "Histories," or as the author styles them, "Books about the Wars" of his time — Persian, Vandal, and Gothic; a treatise "On Buildings"; "Anecdotes" (posthumous), a supplement to the "Histories," consisting of political and personal matter he dared not publish in his lifetime.

Procter, Bryan Waller, pseudonym Barry Cornwall, an English poet; born in London, England, Nov. 21, 1787. He early published four volumes of poems, and produced a tragedy at Covent Garden, whose success was largely due to the acting of Macready and Kemble. He was called to the bar in 1831, from 1832 to 1861 was a metropolitan commissioner of lunacy. His works were issued under the pseudonym "Barry Cornwall" (a faulty anagram of his real name). He died Oct. 5, 1874.

Proctor, in an American university, an executive officer whose duty it is to preserve order and enforce the laws of the institution. In England the king's proctor is a crown official charged with upholding the interests of the crown in certain classes of private law-suits.

Proctor, Edna Dean, an American poet; born in Henniker, N. H., Oct. 10, 1838. Her works are: "Poems"; "The Song of the Ancient People"; "Mountain Maid and Other Poems of New Hampshire"; etc.

Proctor, Richard Anthony, an English astronomer, author of a large number of popular works, principally on astronomy; born in London, England, March 23, 1837. He was a graduate of St. John's College, Cambridge, in 1860. About 1885 he settled in St. Louis, and later moved to Florida. He was at the time of his death the editor of "Knowledge," a monthly journal of popular science. He was also a very successful popular lecturer. He died in New York city, Sept. 12, 1888.

Procurator, one who acts or transacts business for another under his authority; one who manages another's affairs; especially one who undertakes the care of any legal proceeding for another, and stands in his place. In antiquity, the governor of a Roman province under the emperors, also the officer who had the management of the imperial revenue in a province.

Professor. (1) One who professes or makes open and public declaration or acknowledgment of his sentiments, opinions, belief, etc. (2) One who makes a public profession of religion in those churches where such a rule prevails instead of confirmation. (3) One who teaches any art, science, or branch of learning; specifically a person appointed in a university, college, etc., to deliver lectures and instruct the students in any particular branch of learning; as, a professor of Greek, a professor of theology, etc. By common use, the title professor has become greatly abused, and is assumed, not only by teachers of music, dancing, drawing, etc., but even by quacks, conjurers, teachers of boxing, animal trainers, etc.

Profit, any advantage, benefit, or accession of good resulting from labor or exertion; valuable results, useful consequence, benefit, gain; comprehending the acquisition of anything valuable or advantageous, corporeal, or intellectual, temporal or spiritual.

Also the advantage or gain resulting to the owner of capital from its employment in any business or undertaking; the difference between the cost of production of anything and the price for which it is sold; pecuniary gain in any action or occupation; emolument, gain.

Net profit, the difference in favor of the seller of any commodity between the price at which it is sold, and the original cost of production, after deduction of all charges.

Prohibition Party, The. In recent years the cause of absolute prohibition has made great strides in the United States. In the State of Maine, the mother State of prohibitory legislation, what is known throughout the world as the "Maine law" has been in successful operation for a quarter of a century. In various States gubernatorial and State tickets were nominated in successive years from 1876 to 1886, but no election resulted in any case. In New Jersey and in New York in 1886 great interest centered around the efforts of the Prohibition party, owing to the closeness of the vote between the two older parties, though the vote polled by the Prohibitionists amounted to only a few thousands. In 1872, in 1876, in 1880, in 1884, in 1888, in 1892, and in 1896 a national ticket was nominated by the Prohibition party. The vote was as follows in each year: 1872, 5,608; 1876, 9,522; 1880, Dow, 10,305; 1884, St. John, 150,369; 1888, Fisk, 249,360; 1892, Bidwell, 264,132; 1896, Levering, 131,757; 1900, Woolley, 208,833.

In addition to the growing political strength of prohibition there is undoubtedly a marked and gratifying increase in the habit of total abstinence, which is becoming regarded more and more as almost a prerequisite for employment in a responsible capacity.

Projectile, a body projected or impelled forward by force, especially through the air. Thus, a stone discharged from a sling, an arrow from a bow, and a bullet from a rifle, are all projectiles, but the term is more particularly applied to bodies discharged from firearms.

Proletariat, a term used to denote the poorest classes of the community. It is derived, through the French, from the Latin proletarii, the name given in the census of Servius Tullius to the lowest of the centuries, who were so called to indicate that they were valuable to the state only as rearers of offspring (proles). The word has come much into use in the literature of Socialism.

Prologue, a preface or introduction to a discourse or performance; especially an introductory discourse or verses spoken before a dramatic performance or play begins.

Prometheus, in mythology, the son of the Titan Japetus, was a brother to Atlas and Epimetheus, and surpassed all mankind in cunning. He ridiculed the gods, and deceived Jupiter himself. To punish Prometheus, Jupiter caused this wily mortal to be tied to a rock on Mount Caucasus, where, for 30,000 years, a vulture was to feed on his liver, which was never to be diminished. He was delivered from this punishment 30 years afterward by Hercules.

Promise, in law, a declaration made by one person to another for a good or valuable consideration, whereby the person promising binds himself to do or forbear some act, and gives to the promisee a legal right to demand and enforce a fulfillment.

Promised Land, Canaan; that portion of Syria lying between the Jordan and the Mediterranean. It was frequently promised by Jehovah to the patriarchs, and finally bestowed on their descendants, the Israelites.

Promissory Note, a written promise to pay a given sum of money to a certain person, at a specified date. The phrase "for value received" is usually inserted.

Prompter, one who or that which prompts, urges, or incites to action or exertion. Also, one who assists a speaker, when at a loss, by suggesting or repeating words. Specifically, a person placed behind the scenes in a theater, whose duty is to prompt or assist the actors when at a loss, by uttering the first words of a sentence, or words forgotten.

Prong-horn Antelope, inhabiting the W. parts of North America, from 53° N. to the plains of Mexico and California. It is rather more than four feet in length, and stands three

feet at the shoulder. Pale fawn above and on the limbs; breast, abdomen, and rump white. The horns are branched, and are shed annually.

PRONG-HORN ANTELOPE.

Pronoun, a word used in place of a noun or name in order to avoid the too frequent repetition of such noun or name, but differing from a noun in not being permanently attached to any certain object or class of objects, and in not being limited in its application. Pronouns in English are divided into: (1) Personal, (2) Demonstrative, (3) Interrogative, (4) Relative, and (5) Indefinite. Interrogative pronouns are those which serve to ask a question, as who? which? what? Indefinite pronouns, or such as do not specify any particular object, are used, some as substantives, some as adjectives; as, any, aught, each, every, other, etc.

Propaganda Fide, Congregation de, a commission of cardinals charged with the direction of all matters connected with foreign missions in the Roman Church. Pope Urban VIII. (1623–1644) founded the Propaganda College, and here young men of all nations are trained for the priesthood, and take an oath to devote themselves for life to the foreign missions in whatever province or vicariate they may be appointed to by the congregation.

Propeller, one who or that which propels; specifically, the screw by which a steamship is driven through the water; a vessel thus propelled.

Property Tax, a rate or duty levied by the State, county, or municipality on the property of individuals, the value of the property being fixed by assessment.

Prophet, one who prophesies; one who foretells future events; a foreteller, a predicter: specifically, one who, under divine inspiration and instruction, announced future events, as Moses, David, Isaiah, etc.

Prophets, School of the, an association of the prophets in which the elder lovingly trained the younger, who were called their sons (I Kings xx: 35). First Elijah, and then Elisha, presided over such a society.

Prophets, The, men divinely inspired, and who often uttered predictions of future events. Abraham is called a prophet; it is implied that Moses was one, but the more typical prophets began with Samuel, who was a civil ruler as well. Yet the full development of the prophetic order was not till the separation between the two kingdoms. In Judah the general faithfulness to Jehovah left them less scope. In the kingdom of Israel, on the other hand, where the worship, even when nominally that of Jehovah, was idolatrous, and where that of Baal often prevailed, the prophets were very prominent and influential, denouncing apostasy and moral depravity. The first, like Elijah, Elisha, etc., have left no writings; the later prophets have. The last of the Old Testament prophets passed away with Malachi, and scribes took their place.

Prophet's City, a name by which Medina, in Arabia, is often referred to. To this place Mohammed fled for refuge during the Hegira, July 16, 622, and here is his tomb.

Prorogation, in English law, the interruption of a session, as distinguished from an adjournment, which is from day to day, and may be of either or both houses, while a prorogation is of Parliament, also the

time during which the English Parliament is prorogued.

Proscenium, the stage of a theater, or the space included in the front of the scene; in contradistinction to the postscenium, or space behind the scene. In the modern theater it is improperly used to designate the ornamental framework from which the curtain hangs when performances are not going on, dividing the spectator from all engaged on the stage.

Proscription, in Roman history, a mode of getting rid of enemies, first resorted to by Sulla in 82 B. C., and imitated more than once afterward in the stormy years that closed the republic. Under Sulla, lists of names were drawn out and posted up in public places, with the promise of a reward to any person who should kill any of those named in the lists, and the threat of death to those who should aid or shelter any of them. Their property also was confiscated, and their children were declared incapable of honors.

Prosecution, in law, (1) the instituting and carrying on of a suit in court of law or equity to obtain some right, or to redress and punish an injury or wrong. (2) The act or process of exhibiting formal charges against an offender before a legal tribunal, and pursuing them to final judgment; the instituting and continuing of a criminal suit against any person or persons. (3) The party by whom criminal proceedings are instituted; the prosecutor or prosecutors collectively.

Proselyte, a new convert to some religion, sect, opinion, party, or system. In Judaism, a gentile convert. Two kinds were discriminated: (1) Proselytes of the gate, who followed a few Old Testament rules, and (2) proselytes of righteousness, who accepted the whole Mosaic ritual.

Proserpine, in mythology, a daughter of Ceres and Jupiter, of extreme innocence and beauty, and who, while gathering flowers in the lovely vale of Tempe, or the Mysian Plain, was seen and carried off by the god of the infernal regions, Pluto. The prayers and intercessions of her mother ultimately prevailed on Pluto to permit her to spend half of each year on earth, to gratify and gladden the heart and eyes of her devoted parents, the other half being passed with her infernal lord in the realms below.

Prosody, that part of grammar which treats of the quantities of syllables, of accent, and of the laws of versification. In Greek and Latin every syllable had its determinate value or quantity, and verse was constructed by a system of recurring feet, each consisting of a certain number of syllables, possessing a certain quantity and arrangement. In English, verse is constructed simply by accent and number of syllables.

Protection, one of the theories concerning the best development of a country's industries by means of taxes levied for other than fiscal purposes. Incidental protection does not hold that any tariff should be levied with the intention of protecting and fostering a given industry, but that in every case the tax should be laid for public purposes only — i. e., with the intention of sustaining the state, and be only incidentally directed to the protection of the weaker industry. These last assumptions furnish the ground of political divergence between freetraders proper and incidental protectionists. The protectionists take into consideration both the fundamental conditions of the argument and the peculiar character of the industries of a people. They claim that given pursuits may thus be strengthened and encouraged by legislative provisions, and that natural and political laws may be made to coöperate in varying and increasing the productive resources of the state.

Protector, in English history, one who had the care of the kingdom during the minority of the king; a regent; specifically applied to Oliver Cromwell, who took the title of Lord Protector in 1653. In the Roman Catholic Church a cardinal belonging to one of the more important Catholic nations, who, in Rome, watches over questions affecting his country. There are also cardinal protectors of religious orders, colleges, etc.

Proteids, a name given to substances analogous in composition to protein, that is, consisting of carbon, hydrogen, oxygen, and nitrogen, sometimes united with sulphur and phosphorus. The gluten of flour, albumin,

the fibrin of the blood, syntonin, which is the chief constituent of muscle and flesh, and casein are examples of proteids. Proteids are the essential food stuffs.

Protest, ordinarily, a solemn affirmation or declaration of opinion (frequently in writing), generally in opposition to some act or proposition; a solemn affirmation by which a person declares either that he entirely dissents from and disapproves of any act or proposition, or else only conditionally gives his assent or consent to an act or proposition, to which he might otherwise be considered to have assented unconditionally.

In commerce, a formal declaration by the holder of a bill of exchange or promissory note, or by a notary public at his direction, that acceptance or payment of such bill or note has been refused, and that the holder intends to recover all expenses to which he may be put in consequence of such non-acceptance or non-payment.

Protestant, one who protests. In Church history, the name given to those princes and others who, on April 19, 1529, at the second diet of Speyer, protested against the decision of the majority, that the permission given three years before to every prince to regulate religious matters in his dominions till the meeting of a General Council should be revoked, and that no change should be made till the council met. The name is now extended to all persons and churches holding the doctrines of the Reformation and rejecting papal authority.

Protestant Episcopal Church, a denomination in the United States directly descended from the Church of England, which doctrinally claims to be based on the Holy Scriptures, as interpreted in the Apostles and other ancient creeds of the Church that have been universally received, and to have kept herself aloof from all the modern systems of faith, whether of Calvin, or Luther, or Arminius, leaving her members free to enjoy their own opinions on all points not represented in the Scriptures as necessary to soul's health, and refusing to be narrowed down to any other creed or creeds than those of the Apostles and the Primitive Church. She claims also to have retained all that is essential to church organization in her episcopate, and in her liturgy to have not only a wise and judicious compend of doctrine and devotion, but also one of the most effectual of all possible conservative safeguards for the faith once delivered to the saints. Three clerical orders are recognized—bishops, priests, and deacons—the first deriving their office in direct succession from the apostles by episcopal consecration, and the others receiving ordination at the hands of a bishop. Those of the second order are entitled archdeacons, deans, rectors, vicars, or curates, according to their functions. A reader is a layman licensed by the bishop to read in a church or chapel where there is no clergyman. Parson signifies a clergyman in possession of a parochial church.

From the time of the first congregations of the Church of England, in America, in 1607, to the close of the Revolution, all the clergy in the colonies were regarded as under the supervision of the Bishop of London. The first American bishop was Rev. Samuel Seabury, who, in 1783, was consecrated in Scotland as Bishop of Connecticut. All Protestant Episcopal churches in the United States are associated in one national body, called the General Convention, which meets triennially.

In 1900 the reports of the denomination showed 6,686 churches, 4,961 ministers, 716,431 communicants, 59 dioceses, 17 missionary jurisdictions in the United States and 8 in foreign lands, 84 bishops, 430,901 Sunday-school pupils, and $16,102,467 total contributions.

Protocol, the original draft or copy of a deed, contract, or other document. In diplomacy, the minutes or rough draft of an instrument or transaction; the original copy of a treaty, dispatch, or other document; a document serving as the preliminary to diplomatic negotiations; a diplomatic document or minute of proceedings, signed by the representatives of friendly powers in order to secure certain political ends peacefully; a convention not subject to the formalities of ratification.

Protophytes. The lowest and simplest organisms in the vegetable kingdom. They are regarded as among the Algæ. The life-history of simplest

Protophytes is exemplified in the Palmogloea macrococca, a sort of green scum or slime, growing on damp stones, etc. The cells are generally independent, but in some species remain adherent one to another so as to form a filament. Some species have spiny projections of the outer coat, which is of a horny consistence, as in Staurastrum. Others are notched on the sides; some, as the Closterium, are smooth. Many of the Desmids multiply by subdivision, but the plan is modified so as to maintain the symmetry characteristic of the tribe. At other times multiplication takes place by the subdivision of the endochrome into granular particles, or "gonidia," set free by rupture of the cell wall.

Protoplasm, in biology, etc., the living matter from which all kinds of living things are formed and developed, and to the properties of which all their functions are ultimately referred. Protoplasm is a transparent homogeneous, or granular-looking substance. Under high microscopic power, in many instances, it shows a more or less definite structure, composed of fibrils more or less regular, and in some instances grouped into a honeycombed or fibrillar reticulum, in the meshes of which is a homogeneous interstitial substance. Its composition is a problem with which science is still to deal.

Protozoa, a group of animals, occupying the lowest place in the animal kingdom. They consist of a single cell, or of a group of cells not differentiated into two or more tissues; incapable, as a rule, of assimilating nitrogen in its diffusible compounds (ammonia or nitrates, or carbon in the form of carbonates). The food is taken into the protoplasm, either by a specialized mouth or by any part of the cell substance, in the form of particles.

Proudhon, Pierre Joseph, a French publicist; born in Besancon, France, July 15, 1809. In 1840, after several small works appeared his famous memoir, entitled, "What is Property?" his answer to this question, "Property is Theft," being almost all that is popularly known of him. A second memoir on the same subject exposed him to a prosecution, but he was acquitted. After the revolution of February, 1848, he was chosen member of the Constituent Assembly for the department of the Seine. But he found no hearing at the tribune, and therefore started a newspaper under the title of "The People," which was suppressed, and reappeared three times. In 1849,, he founded his People's Bank, but being soon after sentenced, under the press laws, to three years' imprisonment and a fine, he left France, and the bank was closed by the government. Died in Passy, France, Jan. 19, 1865.

Provancher, Leon, a Canadian priest and naturalist; born in Becancour, P. Q., March 10, 1820. He established "Le Naturalist Canadien" ("The Canadian Naturalist") in 1868. His publications include: "Elementary Treatise on Botany"; "Canadian Plant Life"; "Short History of Canada"; etc.

Provencal, a romance dialect that sprang up in France on the decline of literary Latin. Originally Provencal and Northern French came from the same stock, but by the 12th century they differed almost as widely as French and Italian. Owing to its rhyming facilities it was essentially the language of the troubadors and extended over the area from the Alps to the Pyrenees and the Mediterranean to the Loire, as well as in parts of Spain and Switzerland.

Proverb, an old and common saying; a short or pithy sentence often repeated, and containing or expressing some well-known truth or common fact ascertained by experience or observation; a sentence which briefly and forcibly expresses some practical truth. Unless a saying is capable of being applied to a variety of cases it can never become a proverb.

Proverbs of Solomon, one of the sacred books of the Old Testament ascribed to Solomon. The Hebrew term translated proverbs means literally, a similitude or comparison of two objects, and this is the form that most of them take. Solomon, we are told, uttered 3,000 proverbs; but it has been doubted whether he ever made any collection of them in writing; and it is expressly stated that the latter part of the book, beginning with chapter xxv., was written and added by order of King Hezekiah. The title shows the author rather than the

compiler. It has hardly ever been contended that a large share in the composition of the book is to be ascribed to the Wise King; and the divine authority of the book is sufficiently proved by the quotations made from it in the New Testament. In all ages this book has been regarded as a great store house of practical wisdom.

Providence, a city, capital of the the State of Rhode Island, and county-seat of Providence co.; on the Providence river, an arm of Narrangansett Bay, and 44 miles S. W. of Boston. It is the second city of New England in population and wealth, and is built on a rolling plateau.

Providence has upward of 2,000 manufacturing establishments, with a combined capital of about $60,000,000, and employing about 40,000 persons. It is noted for its manufactures of cotton and woolen goods, jewelry, and stoves, and is the largest seat of fine jewelry manufacture in the United States. The other industries include silverware, tools, engines, locomotives, boilers, sewing machines, screws, files, general hardware, yarn, calico, laces, braids, worsteds, broadcloth, chemicals, etc. There is an extensive coastwise commerce and shipping industry, especially in the coal, cotton and wool trade. There is also an important shell-fish industry.

In 1636 Roger Williams, a Baptist clergyman, was exiled from Massachusetts because he opposed its theocratic laws. He first settled at What Cheer rock, on the Seekonk river, and later at the head of the Providence river, where the Indian chief, Canonicus, granted him a piece of land. In 1643–1644 local government was formed under a royal charter. Providence received its city charter in 1832, and has been enlarged by annexation of territory from adjoining towns. Pop. (1890) 132,146; (1900) 175,597.

Prudden, Theophile Mitchell, an American bacteriologist; born in Middlebury, Conn., July 7, 1849. He was Professor of Pathology in the College of Physicians and Surgeons, New York. His works include: "Handbook of Pathological Anatomy and Histology," with F. Delafield; "Story of the Bacteria"; "Dust and its Dangers"; "An Elder Brother to the Cliff Dweller"; etc.

Prune, the dried fruit of the domestic prune, especially of the varieties called St. Catherine and Green Gage. They contain a large proportion of sugar, etc., so that brandy can be distilled from them.

Prussia, the largest and most powerful State of the German empire; occupying a N. central portion of the European continent; bounded on the N. by the Baltic and Denmark; on the E. by Russia and Poland; on the S. by Bohemia, Bavaria, Wurtemburg, and Baden; and on the W. by Belgium and the Netherlands. From the extreme E. frontier of Prussia Aix-la-Chapelle, the distance is about 775 miles, and from the promontory on the Baltic above Stralsund, to the extreme S. frontier of Silesia, the distance is 404 miles. The length of the coast line is about 250 miles on the North Sea, and 750 miles on the Baltic. Total area of the kingdom, 136,076 square miles.

Prussia is administratively divided into 14 provinces, which are again subdivided into 35 government districts, with the principality of Hohenzollern, the cradle of the royal family.

The surface of the kingdom is generally level, sloping in the N. to the sea, and forming part of the great N. plain of Europe. The S. and S. W. parts of the kingdom are hilly, or even mountainous. The climate of Prussia is varied. Along the Baltic it is moist, and in Eastern Prussia, especially, the winter is long and severe. In Silesia, Brandenburg, and the Saxon and Rhenish provinces, it is comparatively mild.

About 28,479,800 hectares are under cultivation. Large estates are generally managed by stewards and the occupants of smaller properties are, in most cases, the owners. Rye, wheat, barley, oats, potatoes, beet root, flax, hops, tobacco and hemp form the chief products. Chicory is also largely cultivated. The extensive beet root plantations give rise to one of the most important industries; in 1898 there were 312 establishments manufacturing beet root sugar. Madder and other plants used in dyeing are also raised. Fruits and vegetables are most extensively grown in the W. provinces, which are also famous for their wines. Horses, cattle and sheep are extensive-

ly raised, wool being an important product. Large numbers of fine horses are exported from East Prussia.

The mineral products are abundant, coal being the most important. The production of lignite is large. Copper, iron and lead are extensively worked. Prussia yields about one-half of the world's annual production of zinc.

Though more of an agricultural than a manufacturing country, Prussia has greatly distinguished herself, particularly of late years, in the various manufactures. Linens and coarse woolens for domestic consumption are made in every village, and, indeed, in most cottages throughout the kingdom. Large quantities of silk and cotton goods, and linen, are produced in Elberfeld, and other towns of the Rhine provinces. Very superior broadcloth is largely manufactured at Eupen, Malmedy, Berlin, and Aix-la-Chapelle. Prussia occupies an advanced rank as a producer of the useful metals. The articles of hardware made at Berlin, Iserlohn, Hagen, Solingen, Olpe, and Essen enjoy a high reputation, the last-named place being the seat of the famous Krupp steel and gun works. Porcelain, jewelry, watches, and carriages are also manufactured in the latter city on a most extensive scale. Paper, leather, soap, oil and cigars are important manufactures; and beer and spirits are very extensively produced.

Commerce is facilitated by the long coast line, and by an elaborate system of railways and canals. Throughout the kingdom, education is general and compulsory. Absolute religious liberty is guaranteed by the constitution. Nearly two-thirds of the population are Protestants and most of the remainder, Roman Catholic. The State Church is Evangelical or Protestant, and since 1817 has consisted of a fusion of the Lutheran and Calvinistic bodies. The relations of the Roman Catholic Church to the government differ in the various provinces, but in every part of the monarchy the crown reserves to itself control over the election of bishops and priests. The higher Catholic clergy are paid by the State.

The constitution vests the executive and part of the legislative authority in a king who attains his majority on accomplishing his 18th year. The crown is hereditary in the male line, according to primogeniture. The king is advised by a council of ministers appointed by royal decree. The representative assembly, the Landtag, is composed of two chambers, the House of Lords (Herrenhaus) and the Chamber of Deputies (Abgeordnetenhaus). The assent of the king and both chambers is requisite for all laws. The executive government is carried on by a Ministry of State appointed by the king and holding office at his pleasure.

The rise of the Prussian power has been rapid and extraordinary. The kings of Prussia trace their origin to Count Thassilo of Zollern, one of the generals of Charlemagne. His successor, Count Friederich I., built the family castle of Hohenzollern, near the Danube, in the year 980. A subsequent Zollern, or Hohenzollern, Friederich III., was elevated to the rank of a prince of the Holy Roman empire, in 1273, and received the burgraviate of Nuremburg in fief; and his great-grandson, Friederich VI. was invested by the Emperor Sigismund, in 1411, with the province of Brandenburg, and obtained the rank of Elector in 1417. In 1608–1619 the duchy of Prussia was united to the electorate of Brandenburg, the territories of which had been greatly extended by the valor and wisdom of Friederich Wilhelm, "the Great Elector," under whose fostering care arose the first standing army in central Europe. Dying in 1688, he left the province to his son, Frederick I., who assumed the crown at Konigsberg, June 18, 1701. Pomerania was soon after added to Prussia. When Frederick the Great ascended the throne in 1740, his disjointed dominions did not contain 2,500,000 inhabitants, and these had made but little progress in the arts, or in the accumulation of wealth. But before his death, in 1786, Prussia had been increased in size nearly half; while the population had increased to about 6,000,000. Prussia acquired, by the subsequent partition of Poland in 1792, and its final dismemberment in 1795, a great extension of territory, and upward of 2,000,000 inhabitants. Her disastrous contest with France in 1806 lowered Prussia for a while; but after Napoleon's Russian campaign, the people rose en masse,

and drove the French out of Germany. At the general peace of 1815, Prussia recovered all her former possessions (except a portion of her Polish dominions), and gained valuable acquisitions. After the accession, in 1862, of King William I., the executive government presided over by Count von Bismarck, made laws, and even decreed budget estimates, without the concurrence of the chambers. In 1864, Prussia, conjointly with Austria, sent an army to occupy the duchy of Schleswig-Holstein. A war with Denmark followed, which resulted in the annexation of that duchy to Prussia. In 1866, Hanover and Saxony were occupied by the Prussian troops, and a war followed with those kingdoms and with Austria, in which, after a brilliant campaign of two weeks, the latter power was obliged to sue for peace, and relinquish her claims as a German power. In addition, Saxony was left a mere nominal sovereignty under the control of Prussia, while Hanover, Hesse-Cassel, Nassau, and the former free city of Frankfort-on-the-Main became absorbed in the Prussian monarchy. In August, 1870, Napoleon III. declared war against Prussia, and the French armies marched toward the Rhine. An alliance having been entered into between Prussia and the Southern German powers of Bavaria, Wurtemberg, and Baden, their combined forces crossed the Rhine into France. The part of Prussia in the Franco-German war is inextricably involved with that of the whole German nation. The conflict seemed to precipitate the solution of the question which had always been the aim of the king and Bismarck, German unity under Prussian leadership. On Jan. 18, 1871, King William was crowned at Versailles as Emperor of Germany, and on March 21, the first German Reichstag assembled at Berlin. The history of Prussia since is that of Germany.

Prussian Blue, a cyanide of iron possessed of a deep-blue color, and much used as a pigment. It is also used in medicine.

Prussian Brown, a color obtained by adding a solution of the yellow prussiate of potash to a solution of sulphate of copper, which throws down a precipitate of deep brown. This, when washed and dried, is equal to madder, and possesses greater permanency.

Prussic Acid, a name given to hydrocyanic acid because it was first obtained from Prussian blue.

Prutz, Robert Eduard, a German poet and historian; born in Stettin, May 30, 1816. He died in Stettin, June 21, 1872.

Psalms, Book of, a book of the Old Testament. It was the praise book or psalter of the Hebrew temple or synagogues. In the present Hebrew Bibles it is placed just after the Prophets at the head of the Hagiographia, and in Luke xxiv: 44, is generally supposed to stand for that division of the Old Testament books. The 150 psalms are arranged in Hebrew in five books, each terminating with a doxology, in some cases closing with "Amen and amen." The revised version prints them separately. The book of Psalms is quoted or alluded to as an inspired composition by Our Saviour and His apostles at least 70 times; no Old Testament book is more frequently quoted. Its canonical authority has never been seriously doubted. Its rhythmical form and careful parallelism (now rendered obvious by the revised version) adapt it for the musical part of public worship.

Psalmody, the art and practice of singing psalms. Psalm singing was introduced by the Reformers; but Calvin discouraged any but simple melody, while Luther practised and favored part harmony, as did also John Knox in his psalter.

Psalmist, a writer or composer of psalms; a title applied especially to the authors of the Scriptural psalms, and specifically, with the definite article prefixed, to David. Psalmists, in Church history, were singers in the early church whose duty it was to lead the people.

Psalter, the Book of Psalms; also a book containing the Psalms separately printed, and with musical accompaniment adapted to each; also specifically, the version of the Psalms in the English Book of Common Prayer.

Pseudonym, a false, feigned, or fictitious name; a pen-name.

Psychology, the science of mental phenomena. Opinion is far from unanimous on many of the most important points of psychological doctrine, especially on such points as involve a philosophical view of the nature of mind.

Ptarmigan, a game bird found in the United States, and also in Northern Europe. In winter the plumage of the male is almost wholly white, with a small patch behind the eye; the shafts of the primaries and the bases of the exterior tail-feathers are black, and there is a patch of bare red skin around the eye. In the summer the black retains its position, but the white is mottled and barred with black and gray. The length of the adult male is rather more than 15 inches.

Pterodactyl, a remarkable genus of fossil lizards, peculiar to the Mesozoic strata. The careful investigations of Cuvier, however, showed that the pterodactyl was a true lizard, but possessed of the power of flight, which it performed, not by a membrane stretched over its ribs, like the living dragons, but more as in the bats, except that the wing was attached, not to several, but only to a single finger — the fifth — the others being free and short. The bones of the fifth finger were very elongated, and the last joint terminated in a long, slender, unguarded apex; the terminal joints in the other fingers were furnished with strong claws.

Pterosauria, an extinct order of flying Reptilia of Mesozoic age.

Pthah, or **Phtha,** an ancient Egyptian divinity, the creator of all things and source of life, and as such father and sovereign of the gods. He was worshiped chiefly at Memphis under the figure of a mummy-shaped male, and as a pygmy god. Equivalent to the Greek Hephæstus.

Ptolemæus, the dynastic name of 13 kings of Egypt, who reigned from 323 to 43 B. C. The most famous was Ptolemæus Soter, who reigned from 323 to 285 B. C.

Ptolemaic System, the hypothesis maintained by Ptolemy in his "Almagest" that the earth was a fixed body, remaining constantly at rest in the center of the universe, with the sun and moon revolving round it as attendant satellites.

Ptolemy I., surnamed Soter, king of Egypt, founder of the Græco-Egyptian dynasty of the Lagides, was a Macedonian, supposed to be a natural son of Philip II., and became a favorite general of Alexander the Great, whom he accompanied on his expedition to Asia. On the death of his master, in 323 B. C., Potelmy I., obtained Egypt for his province. For 20 years he was almost constantly engaged in war. He took the title of king. He saved Rhodes when besieged by Demetrius, and received the title of Soter (saviour); and after the fall of Antigonus he applied himself to the promotion of commerce, literature, science, and the arts in his own dominions. Philosophers, poets, and painters gathered to his court, and the foundations were laid of the famous Alexandrian Library and Museum. In 285 Ptolemy resigned his crown to his son, surnamed Philadelphus, and died in 283.

Ptolemy II., surnamed Philadelphus (lover of his brother), king of Egypt, born in Cos, 311 B. C., was the youngest son of the preceding by his favorite wife, Berenice. He became king on the abdication of his father in 285, and had a long, and for the most part peaceful reign. He had been carefully educated, and he entered heartily into his father's plans for promoting the prosperity of his kingdom, completing the Alexandrian Library Museum, patronizing learning and learned men, founding colonies, and increasing his army and his revenue. He made a treaty of alliance with the Romans, and encouraged the resort of Jews to Egypt. According to tradition it was by his order that the Septuagint version of the Old Testament was made. Ptolemy was twice married; his second wife being his sister Arsinoe, widow of Lysimachus. He died in 247.

Ptolemy XII., Dionysius, son of Ptolemy Auletes, king of Egypt, succeeded to the throne conjointly with his sister Cleopatra, under the protection of Pompey, in 52. He became a partisan of Cæsar in the civil war, and after the battle of Pharsalia caused Pompey who sought refuge in his states, to be assassinated in 48.

Aspiring to be sole king, he then took arms against Cæsar, who had decided that Cleopatra should continue to reign with him, and was drowned in the Nile while flying from the field of battle, 47 B. C.

Ptolemy, Claudius, a celebrated astronomer and geographer, who flourished at Alexandria, about A. D. 140–160. He is considered the first astronomer of antiquity. He corrected Hipparchus' catalogue of the fixed stars, and formed tables by which the motions of the sun, moon and planets might be calculated and regulated. He was the first who collected the scattered and detached observations made by the ancients, and digested them into a system; this he called the "Great Construction." This great work of Ptolemy will always be valuable on account of the observations he gives of the places of the stars and planets in former times, and according to ancient astronomers that were then extant; but principally on account of the large and curious catalogue of the stars, which, being compared with modern catalogues, enables astronomers to deduce the true quantity of their apparent slow progressive motion according to the order of the signs, or of the precession of the equinoxes.

Ptomaine, a putrescent product of animal origin and of a basic or alkaloidal nature, closely allied to the vegetable alkaloids; a cadaveric poison. About 150 varieties of ptomaines are known, some being harmless, others very poisonous. Ordinary foods frequently undergo changes that render them harmful, and especially is this so with mussels, clams, oysters, fish, meat, sausage, milk, ice-cream, cheese and canned goods. These changes are due to the presence of ptomaines. Heat will destroy the ptomaine bacteria, but their poison is not eliminated by cooking.

Publican, in Roman antiquities, a collector of revenues, or farmer of the taxes consisting of tolls, tithes, harbor duties, duties for the use of pasture lands, mines, salt works, etc., in Roman provinces. From the nature of their office, and the oppressive exactions of many of their number, these officials were generally regarded by the inhabitants with detestation.

Public Health Acts. In the United States scientific investigation into the means for preserving health is of recent growth, though laws were enacted by the colonies for the prevention of the introduction of contagious or infectious diseases from foreign ports. State boards of health have been created in nearly all the States. In 1878 Congress passed "An Act to prevent the introduction of contagious or infectious diseases in the United States," providing that no vessel coming from a foreign port where contagious or infectious disease may exist shall enter any port of the United States, except in manner prescribed by regulations. In 1879 a National Board of Health was created by Congress; its duties were to obtain information on all matters affecting public health, and to advise the several departments of the government and the executives of the several States on all questions submitted by them. Town or city boards of health have existed for many years in all large municipalities.

Publicist, a term originally applied to a writer on international law, now used to denote a writer on current politics.

Public Prosecutor, an officer appointed to originate and conduct prosecutions in the public interest.

Puccinotti, Francesco, an Italian physician; born in Urbino, Italy, in 1794. In 1838 the Tuscan Archduke appointed him Professor of Medical Jurisprudence in Pisa University, and there he published his special lecture on "Nervous Diseases," his work on the "Cachexiæ," and on the maladies induced by the rice-culture (Risaie), and, above all, his masterpiece, the "History of Medicine," representing the labor of 20 years. He died in Florence, Italy, Oct. 8, 1872.

Puck, in mediæval mythology, the "merry wanderer of the night," whose character and attributes are depicted in Shakespeare's "Midsummer Night's Dream." He was the chief of the domestic tribe of fairies, or "brownies," as they are called in Scotland; and innumerable stories are told of his nocturnal exploits, among which drawing the wine and cleansing the kitchen while the family were asleep are the most prominent. He is also known as Robin Goodfellow, Friar Rush, etc.

Pueblos (Spanish, pueblo, "village"), a semi-civilized family of American Indians in New Mexico and Arizona, dwelling in large single habitations, which are sometimes capacious enough to contain a whole tribe. These edifices — which are often five or six stories high, and from 130 to 433 yards long, with many rooms (53 to 124) on each floor — are commonly constructed of adobe or sun-dried brick; the ground floor is invariably without doors or windows, entrance being effected by a ladder leading to the second story; and indoors ladders take the place of staircases everywhere. A somewhat pyramidal aspect is given to the whole building by each successive story receding a few feet from the line of that below it. Each family of the tribe has a separate apartment, and there are also large rooms for general council chambers and for tribal dances. In New Mexico there are 19 such villages, with over 8,000 occupants, who are skillful agriculturists, employing irrigation ditches extensively, and rearing horses, cattle, and sheep. Spinning and weaving and the manufacture of pottery also are carried on. The Moquis of Arizona are a related tribe, numbering about 1,800, in seven villages built on the summit of isolated hills. The Pueblos are under Roman Catholic missionaries, and are making steady progress in civilization and education, though on their Christianity they have grafted many of their old pagan beliefs and customs, to which they obstinately cling. They were first visited by the Spaniards about 1530, at which period their habits and their habitations were very much the same as today. It is evident, however, from the wide area over which the ruins of old pueblos and remains of ancient pottery have been found, that they were at one time very much more numerous than they are now.

Puerto Cabello, a seaport of Venezuela, in the State of Carabobo, 78 miles W. of Caracas. It stands on a long, low narrow peninsula on the Caribbean Sea, and has a safe, deep, and roomy harbor, defended by a fort and batteries. It is the port of Valencia, which is 34 miles distant by rail. There is an active foreign trade, which averages $6,250,000 annually; the chief exports are coffee, cacao, indigo, cinchona, cotton, sugar, divi-divi, and copper ore. Pop. about 11,000. It was bombarded by the Germans during the recent blockade of Venezuelan ports by Germans, British and Italians.

Pufendorf, or **Puffendorf, Samuel, Baron von,** a German writer on the law of nature and nations; born in 1632. He studied theology and law at Leipsic and Jena, and in 1660 appeared his "Elements of General Jurisprudence." In 1661 he became Professor of the Law of Nature and of Nations at Heidelberg. In 1667 he published his work "The Commonwealth of Germany," which, from the boldness of its attacks on the constitution of the German empire, caused a profound sensation. In 1670 he went to Sweden, became Professor of Natural Law in the University of Lund, and brought out his chief work, "Natural Law and the Law of Nations," and in 1675 an abstract of it. In 1686 he received a summons to Berlin from Frederick William, Elector of Brandenburg, a history of whom Pufendorf wrote for his son, the first king of Prussia. In 1694 he was created a baron by the king of Sweden, and in the same year he died in Berlin. There are English translations of his principal works.

Puff Adder, one of the most venomous serpents of South Africa. In length, when full grown, it is from four to five feet, and is as thick as a man's arm. The head is very broad, the tail suddenly tapered; prevailing color, brown, checkered with a darker shade and with white. It usually glides along partially buried in the sand, and, when disturbed, puffs out the upper part of its body, whence its popular name. The Bosjesmans smear their arrows with its venom.

Puff Birds, a family resembling kingfishers in form, but living on insects like fly catchers; they also resemble the bee eaters, and are found only in South and Central America.

Puffin, a common sea bird, with many popular names—bottlenose, coulterneb, pope, seaparrot and tammy norie, with others that are only locally known. By extension, the name is applied to other species of the genus.

The common puffin is rather larger than a pigeon; plumage glossy black above, under surface pure white; feet orange-red; bill very deep, and flattened laterally, parti-colored — red, yellow, and blue, and grooved during the breeding season, and undergoing a kind of moult at its close — a peculiarity shared by other species.

Pugilism, the practice of boxing or fighting with the fists. In the schools and by amateurs, it is practised with the gloves; in the prize ring sometimes with the naked fists. Man being instinctively a pugnacious animal, and the fist being the simplest and most natural weapon, it may be taken for granted that pugilism, as a mode of settling differences, is coeval with man himself. It formed one of the earliest of the athletic games of the Greeks; and we find the Greek poets describing their heroes and gods as excelling in the pugne. Boxing for men was introduced in the Olympic games in the 23d Olympiad, and for boys in the 37th Olympiad. With the exception of a girdle about the loins, the ancient pugilist fought nude. In the United States pugilism as an athletic exercise is permitted, but the brutal exhibitions of the prize ring are generally prohibited by law.

Pulaski, Count Casimir, a Polish patriot and military officer, who participated in the war of the American Revolution; born in 1747. His father, a Polish nobleman, was the organizer of the celebrated Confederation of Bar, in hostility to Russia, and for the liberation of his country, in which Casimir eagerly joined, carrying on a desultory warfare with varied success till the coalition of Russia, Austria, and Prussia completed the conquest of Poland. His father and brothers being killed, Casimir escaped with difficulty into Turkey, whence he proceeded by way of France to join the Americans, then fighting for independence, bearing recommendations from Franklin to Washington, whom he joined in 1777. Entering as a volunteer, he so distinguished himself at the battle of Brandywine as to be promoted by Congress to a cavalry command, with the rank of Brigadier-General, which command, however, he resigned five months after, in 1778. He afterward organized an independent corps of cavalry and light infantry, with which he rendered effectual service under General Lincoln, in South Carolina, in 1779, and in the siege of Savannah, Ga., where, in an assault on the latter place, he was mortally wounded. He died in 1779.

Pulaski, Fort, a fortification at the mouth of the Savannah river. Seized by the Confederates, Jan. 3, 1861, it was besieged and taken by the Union forces, April 12, 1862.

Pulgar, Fernando de, a Spanish writer in the latter part of the fifteenth century. He wrote a "Chronicle" of the reign of Ferdinand and Isabella; "Notable Men of Castile"; a commentary on the ancient "Couplets of Mingo Revulgo."

Pulitzer, Joseph, an American journalist; born in Budapest, Hungary, April 10, 1847. When quite young he came to the United States and served in the Civil War. In 1883 he purchased the New York "World," then on the verge of failure, but he built it up till it became one of the most substantial papers in the city. In 1903 he donated two millions of dollars to Columbia University, New York city, to establish a "School of Journalism."

Pullman, George Mortimer, an American inventor; born in Chautauqua co., N. Y., March 3, 1831; learned the cabinetmaker's trade; settled in Chicago; studied for many years the problem of making journeys by rail more comfortable; and as a result invented the Pullman palace car. In 1863 he started building these cars, and in 1867 organized the Pullman Palace Car Company. He also invented the vestibule train and founded the town of Pullman, Ill., in 1880. He died in Chicago, Oct. 19, 1897.

Pulpit, a raised place or desk in a church, from which the preacher delivers his sermon. They are now generally made of wood, but were formerly also made of stone, richly carved and ornamented. Hence, used figuratively, for preachers generally or preaching; the teaching of preachers.

Pulque, a vinous beverage, made in Mexico, by fermenting the juice of the various species of the agave. It resembles cider, but has a disagreeable odor, like that of putrid meat.

Pulse, in physiology, the beat or shock felt in any artery when slight pressure is made on it, caused by the systole of the heart. At birth the number of beats is about 140, at the end of the first year 120, at the end of the second 110; during middle life between 70 and 80, and in old age usually a little more. It is slower in man than in woman, and is also affected by the position of the body.

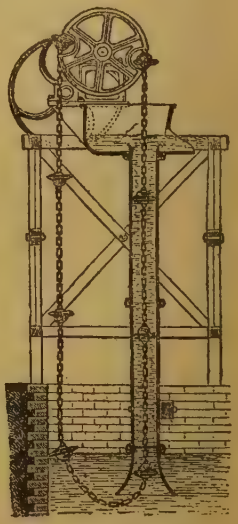
Pulse, a general name for leguminous plants or their seeds; such as beans, peas, etc.

Pulsometer, a form of pump for raising water, by the condensation of steam, in a vessel situated at such elevation above the water supply that the atmospheric pressure will raise the water to the chamber and operate the valves. Its most common use is to fill steam boilers.

Puma, the cougar of the French, the leon of the South Americans, and the panther or "painter" of the trappers. It is the largest feline of the New World, measuring 40 inches from the nose to root of tail, which is about 20 inches more; the head is small, mane absent; general color of upper surface tawny yellowish-brown, varying in intensity in different individuals; lower parts of the body and inner surface of limbs dirty white. The young, when born, are spotted with brown, and the tail is ringed. The puma is destructive, and slays far more than it can eat, but rarely, if ever, attacks man, and may be tamed with little difficulty. Edmund Kean had one which followed him about like a dog. It ranges from Canada to Patagonia, being most numerous in the forest districts of Central America.

Pumice, a very porous, or cellular, froth-like rock, of extreme lightness, floating on water. Structure, web-like, consisting of vitreous threads either intimately interwoven or parallel. Like the more compact forms of vitreous lavas, it varies much in chemical composition, which, however, is mostly that of trachytic rocks. It owes its cellular structure to the enormous expansion of aqueous vapor consequent on the relief from pressure during the extrusion of vitreous lavas at the earth's surface. In commerce, pumice stone. It is imported from the Lipari Isles, and is used for polishing metals and marble, and smoothing the surface of wood and pasteboard. It is said to be a good glaze for pottery.

Pump, a machine, engine, or device, consisting of an arrangement of a piston, cylinder, and valves, for raising water or other liquid to a higher level, or for compressing or exhausting air and other gases. There are numerous varieties of pumps differing more or less in construction, according to the purposes for which each is intended, but the most important are the suction pump, the lifting or lift pump, the force pump, and the centrifugal or rotary pump.



CHAIN PUMP.

Pumpelly, Raphael, an American geologist; born in Oswego, N. Y., Sept. 8, 1837. In his early life he conducted explorations for the governments of Japan and China; was professor at Harvard for several years; and from 1879 to 1892 geologist in charge of the Archæan division of the United States Geological Survey. His chief works are: "Geological Researches in China, Mongolia, and Japan" "Across America and Asia," "Mining Industries of the United States," etc.

Pumpkin, a climbing plant and its fruit, originally from Astrachan, but widely cultivated in America. It has rough leaves, the flowers large, solitary. It is raised in the open air. The pumpkin, cooked in various forms, is a favorite dish in America, and especially in the Northeastern States of the Union, where the pumpkin pie is almost indispensable at the Yankee housewife's table. Boiled and mashed it is an excellent side dish.

Pun, a play on words, the wit of which depends on a resemblance in sound between two words of different and perhaps contrary meanings, or on the use of the same word in different senses, etc.

Punch, with his wife Judy and dog Toby, the chief characters in a popular comic puppet show, of Italian origin, the name being a contraction of Punchinello, for Pulcinello, the droll clown in Neapolitan comedy. The exhibition soon found its way to other countries.

Punch, or the **London Charivari,** the chief of English comic journals, a weekly magazine of wit, humor, and satire in prose and verse, illustrated by sketches, caricatures, and emblematic devices. It was founded in 1841, the first number appearing July 17 of that year, and, under the joint editorship of Henry Mayhew and Mark Lemon, soon became a household word, while ere long its satirical cuts and witty rhymes were admitted a power in the land. "Punch" is recognized as an English institution.

Punctuation, the act, art, or method of punctuating or pointing a writing or discourse; the act, art, or method of dividing a discourse into sentences, clauses, etc., by means of points or stops. Punctuation is performed with four points or marks, viz., the period (.), the colon (:), the semicolon (;), and the comma (,). The other points used in composition are the note of interrogation or inquiry (?), and of exclamation, astonishment, or admiration (!). The first printed books had only arbitrary marks here and there, and it was not till the 16th century that an approach was made to the present system by the Manutii of Venice.

Punic, the language of the Carthaginians. It was an offshoot of Phœnician, belonging to the Canaanitish branch of the Semitic tongues.

Punic Wars, three great wars between the Romans and the Carthaginians. The first (264–241 B. C.) was for the possession of Sicily, and ended by the Carthaginians having to withdraw from the island. The second (218–202 B. C.), the war in which Hannibal gained his great victories in Italy, was a death struggle between the two rival powers; it ended with decisive victory to the Romans. The third (149–146 B. C.) was a wanton one for the destruction of Carthage, which was effected in the last-named year.

Punishment, a penalty inflicted on a person for a crime or offense, by the authority to which the offender is subject; a penalty imposed in the enforcement or application of law. The punishments usual for criminal offenses in the United States are death by hanging or electricity, or by shooting, imprisonment with and without hard labor, solitary confinement, detention in a reformatory school, subjection to police supervision, imposition of fines, and putting under recognizance. In New York, Ohio and Massachusetts the death penalty is inflicted by electrocution, and in Delaware whipping is resorted to as a punishment for certain offenses.

Punjab, an extensive territory in the N. W. of India, most of it under direct Anglo-Indian authority, and ruled by a lieutenant-governor, a large portion of the remainder constituting the protected state of Kashmir.

Punt, a large, square-built, flat-bottomed vessel, without masts, used as a lighter for conveying goods, etc., and propelled by poles. Also, a small, flat-bottomed boat, with square ends, used in fishing, and propelled by poles.

Punta Arenas. The chief port on the Pacific of the Central American republic of Costa Rica.

Pupa, or **Pupe,** in entomology, the third stage in the development of an insect. On reaching its full growth the larva ceases to eat, and some time later becomes encased in a closed shell or case, whence after a certain lengthened period, which typically is one of repose, it emerges as a perfect insect.

Pupin, Michael Idvorsky, an American scientist; born in Idvar, Hungary, Oct. 4, 1858; was graduated at Columbia University in 1883; studied at the University of Berlin; and was appointed Adjunct Professor of Mechanics at Columbia University in 1889. In 1901 he announced the discovery of a new method of ocean telephony. He was a member of the American Mathematical Society, American Philosophical Society, etc. He wrote "Propagation of Long Electrical Waves"; "Wave Propagation Over Non-Uniform Conductors"; etc.

Purana, the last great division of Hindu sacred literature.

Purcell, Henry, an English composer; born in 1658. In 1680, probably, he composed for a private seminary "Dido and Eneas," which has been called the first genuine English opera, but has never been produced on the public stage. For some years after he became organist of Westminster Abbey he composed mainly anthems and sacred music, all of great excellence. In 1690 he wrote the music for Dryden's version of "The Tempest." In 1691 he produced the music to Dryden's "King Arthur," which, though considered his dramatic masterpiece, was not published till 1843. In 1694 he wrote, for St. Cecilia's Day, his "The Jubilate" and "Te Deum," and in 1695 the music to "Bonduca," in which was "Britons, Strike Home." Purcell was equally great in church music, chamber music, and music for the theater. He died in 1695, and was buried in Westminster Abbey.

Purchase, in law, the suing out and obtaining a writ; the obtaining or acquiring the title of lands and tenements by money, deed, gift, or any means except descent. In mechanics, a means of increasing applied power; any mechanical hold, advantage, power, or force applied to the raising or removing of heavy bodies; mechanical advantage gained by the application of any power.

Purdue University, a coeducational non-sectarian institution in Lafayette, Ind.; founded in 1874.

Purgatory, in Roman theology, a place in which souls who depart this life in the grace of God suffer for a time, because they still need to be cleansed from venial, or have still to pay the temporal punishment due to mortal sins, the guilt and eternal punishment of which have been remitted.

Purification, a Jewish rite. It was mainly the one through the performance of which an Israelite was readmitted to the privilege of religious communion, lost through uncleanness. The chief varieties of such uncleanness, and the methods of purification from it required, are detailed in Lev. xii., xiv., xv., and Numb. xix.

Purim, the Festival of Lots, which was instituted by Mordecai and is celebrated to this day by the Jews on the 14th and 15th of the month Adar (March), in commemoration of their wonderful deliverance from the destruction with which they were threatened by Haman. On these festive days the book of Esther is read, presents are interchanged, and gifts are sent to the poor.

Puritan, the name given, at first perhaps in contempt, to those clergymen and others in the reign of the English Queen Elizabeth, who desired a simpler, and what they considered to be a purer, form of worship than the civil and ecclesiastical authorities sanctioned. New England was settled very largely by the Puritans. Also, one who has severely strict notions as to what is proper or who is strict in his religious duties.

Puritan, The, a twin-screw, iron, double-turret monitor of the United States navy, for coast defense.

Purples, Ear Cockle, or Peppercorn, a disease affecting the ears of wheat. Infected grains assume a dark-green color, which soon deepens to a black, and become rounded like small peppercorns. The husks open, and the diseased grains are found to contain no flour, but a moist substance.

Purse Crab, a name for decapod crustaceans allied to the hermit crabs. A species, the robber crab, found in the Mauritius and the more E. islands of the Indian Ocean, is one of the largest crustaceans, being sometimes two to three feet in length. It resides on land, while paying a nightly visit to the sea, often burrowing under the roots of trees, lining its hole with the fibers of the cocoanut husk and living

on the nuts, which (according to some writers) it climbs the trees to procure, and the shells of which it certainly breaks with great ingenuity.

Purser, on shipboard, the officer whose duty is to keep the accounts of the ship to which he is attached. In mining, the paymaster or cashier of a mine, and the official to whom notices of transfer are sent for registration in the cost-book.

Purslane, a plant, with fleshy succulent leaves, naturalized throughout the warmer parts of the world. Purslane was formerly more used than at present in salads as a pot herb, in pickles, and for garnishing. It has anti-scorbutic properties.

Purves, George T., an American clergyman; born in Philadelphia, Pa., Sept. 27, 1852; was graduated at the University of Pennsylvania in 1872 and at the Princeton Theological Seminary in 1876; was Professor of New Testament literature and Exegesis at the Princeton Theological Seminary in 1892–1900, when he accepted a call to the Fifth Avenue Presbyterian Church, New York city. He wrote "The Apostolic Age"; etc. He died in New York city, Sept. 24, 1901.

Pus, in physiology and pathology, the product of suppuration, a thick, viscid, yellow fluid, consisting of liquor puris, pus corpuscles, and other histological particles.

Pusey, Caleb, an American Quaker colonist; born in Berkshire, England, about 1650. He came with Penn's company to America in 1682, erected the first mills in the province, held many high places in civil affairs, and was a noted controversialist writer of his day. He published a great number of pamphlets and articles in defense of his creed. He died in Chester co., Pa., Feb. 25, 1727.

Pusey, Edward Bouverie, an English theological writer, a leader of the Anglo-Catholic (Tractarian) party in the Established Church; born near Oxford in 1800. He published: "The Holy Eucharist a Comfort to the Penitent," a sermon which resulted in his suspension for three years; two sermons on "The Entire Absolution of the Penitent," equally revolutionary. Of his larger works the most important are: "The Doctrine of the Real Presence"; and "The Real Presence of the Body and Blood of Christ the Doctrine of the English Church." Died Sept. 16, 1882.

Pustule, a pimple, a little blister. Also a vesicle containing pus, as in ecthyma, furunculus, and smallpox. Malignant pustule or charbon is a disease transmitted to man from sheep or oxen, occasionally from horses, to some exposed part, lip or face usually, and nearly always fatal.

Putnam, Frederick Ward, an American scientist; born in Salem, Mass., April 16, 1839; was graduated at Harvard University in 1862; became chief of the Department of Ethnology at the World's Columbian Exposition in Chicago in 1893. He is a member of numerous American and foreign scientific societies. The French government gave him the Cross of the Legion of Honor.

Putnam, George Haven, an American publisher and author, son of George P.; born in London, England, April 2, 1844. He entered the publishing business in 1866, and became the head of the firm of G. P. Putnam's Sons, New York. His works include: "International Copyright" (1879); "Books and their Makers during the Middle Ages" (1896), etc.

Putnam, George Palmer, an American publisher and author; born in Brunswick, Me., Feb. 7, 1814. In 1848 he established the publishing house now conducted under the name of G. P. Putnam's Sons; and also founded "Putnam's Magazine," which was subsequently merged with "Scribner's Monthly." His works include: "The Tourist in Europe"; "The World's Progress" (1850); "Ten Years of the World's Progress"; etc. He died in New York, Dec. 20, 1872.

Putnam, Herbert, an American librarian; born in New York city, Sept. 20, 1861; was graduated at Harvard in 1883; studied at the Columbian Law School; was admitted to the Minnesota bar in 1886; librarian of the Boston Public Library in 1887–1891; and was appointed librarian of Congress in 1899.

Putnam, Israel, an American general in the Revolutionary War; born in Danvers (then part of

Salem), Mass., in 1718. He was destined to the occupation of a farmer, and continued in that avocation till the French and Indian war broke out, when, at the age of 36, he took service in the English army, and from his known courage and energy, received the command of a company of light troops, or "rangers." When the dispute between this country and England commenced, he was following the quiet life of a farmer and tavern keeper; but the first blood that was shed aroused all his energy. He was created Major-General by Congress, and at Bunker Hill, New York, and during Washington's retreat through New Jersey, he showed himself one of the bravest and most devoted of the patriot leaders. But in 1779 he was stricken with paralysis, and was prevented from participating in the final triumphs of the national cause. His character is well depicted by the inscription on his tomb: "He dared to lead where any dared to follow." He died in 1790.

Putnam, Mrs. Mary (Lowell), an American historical writer, sister of James Russell Lowell; born in Boston, Mass., Dec. 3, 1810. In 1832 she married Samuel R. Putnam, a merchant of Boston. Besides a translation from the Swedish, and numerous magazine articles, she published: "History of the Constitution of Hungary"; and two dramatic poems on the subject of slavery. She died in Boston in June, 1898.

Putnam, Mrs. Sarah A. Brock, an American novelist and writer; born in Madison Courthouse, Va., about 1845. In 1883 she married the Rev. Richard Putnam, of New York. Her works include: "Richmond during the War"; "The Southern Amaranth"; etc.

Putnam, William Le Baron, an American jurist; born in Bath, Me., May 12, 1835; was graduated at Bowdoin College in 1855 and admitted to the bar in 1858; practised in Portland, Me., till 1892; was a member of a commission to arrange with the British government the rights of American fishermen in Canadian waters in 1887; served also as a commissioner under the treaty of Feb. 6, 1896, between the United States and Great Britain; and was appointed a judge of the United States Circuit Court in 1892.

Putnam, Fort, the principal defense of West Point during the Revolution. Now in ruins.

Putrefaction, the apparently spontaneous decomposition of organic substances, especially those rich in nitrogen. It differs from fermentation in being accompanied by the evolution of fetid and noxious gases. In the process of putrefaction, organic bodies of a higher order are changed, sometimes into lower organic compounds, sometimes into inorganic compounds, as ammonia, sulphuretted hydrogen, etc., and sometimes into simple substances, as hydrogen and nitrogen.

Puts and Calls, terms used in American stock dealings. The trade in privileges is something which is scarcely understood outside of Board of Trade and Stock Exchange circles. For $1 per 1,000 bushels a trader can purchase the privilege to "put" (sell) or "call" (buy) from the seller of the privilege at a stipulated price and within a stipulated time. The ordinary privileges are sold one day to be good to the close of the next session. In inactive markets the "put" and "call" prices may be close together and close to the market price of the property. They are countenanced by the State of New York and are a regular feature in the New York Stock Exchange. In Illinois they are specifically classed as gambling operations. The theory of "privileges" is that they are a species of insurance by which an operator can protect himself against market fluctuations. A trader who is "short" in the market can protect his position to a certain degree by buying "calls"; a "long" can prevent losses in the same degree by buying "puts." The insurance proposition is a theory, however, as "privileges" more often serve to originate new trades than to serve as an insurance on existing business conditions.

Pyæmia, or Pyemia, a diseased condition in which the blood is poisoned by pus or by some of its constituents; blood poisoning; septicæmia

Pycnogonum, a genus of Arachnida, the sea spiders. Some species are

parasitic upon fishes and other marine animals, but the common species is free when adult, and does not appear to be parasitic during any period of its existence. One species attaches itself parasitically to the whale.

Pygmalion, in Greek mythology, grandson of Agenor, King of Cyprus. He fell in love with an ivory statue of a young maiden he himself had made, and prayed to Aphrodite to give it life. His prayer was granted, on which he married the maiden.

Pygmy, or **Pigmy,** in classical mythology, one of a fabulous nation of dwarfs dwelling somewhere near the shores of the ocean, and maintaining perpetual wars with the cranes. Ctesias represented a nation of them as inhabiting India. Other ancient writers believed them to inhabit the Indian islands; Aristotle places them in Ethiopia, Pliny in Transgangetic India. A race of pygmies has been discovered in Central Africa.

Pyle, Howard, an American illustrator and author; born in Wilmington, Del., March 5, 1853. He was an illustrator for periodicals, and has become popular also as a writer, chiefly of juvenile literature. His works include: "Buccaneers and Marooners of America" (1891); etc.

Pylorus, the small and contracted end of the stomach leading into the small intestines.

Pym, John, an English statesman and leader of the popular party during the reigns of James I. and Charles I.; born in Somersetshire, England, in 1584. He studied at Oxford and became famous as a lawyer. He entered Parliament in 1614, and during the reign of James he attained great influence by his opposition to the arbitrary measures of the king. In 1626 he took part in the impeachment of Buckingham and was imprisoned. In the Short Parliament of 1640 Pym and Hampden were exceedingly active as leaders of the popular party, and in 1641 Pym was offered the chancellorship of the exchequer. He impeached Strafford, and at his trial appeared as accuser. He was the main author of the Grand Remonstrance, the final appeal presented in 1641, and one of the five members to arrest whom the king went to the House of Commons in January, 1642. When civil war became inevitable Pym was appointed one of the committee of safety, and while he lived was active in resisting the negotiations of any peace with the king which did not secure the liberties of the subject and the supremacy of Parliament. It was mainly his financial skill that enabled the parliamentary army to keep the field. In November, 1643, he was made lieutenant-general of ordnance, and in the following month he died, and was buried in Westminster Abbey.

Pyramid in Egyptian antiquities, a solid structure substantially invariable in form, viz., a simple mass resting on a square or sometimes approximately square base, with the sides facing with slight deviations toward the four principal winds, and tapering off gradually toward the top to a point or to a flat surface, as a substitute for an apex. The proportion of the base to the height is not always the same, nor is the angle of inclination uniform. The pyramids were constructed in platforms, and then reveted or coated with blocks or slabs of granite, as may still be observed in incomplete pyramids. Recently the theory has been maintained that in the case of the largest pyramids, a smaller one was erected as a nucleus, and subsequently enveloped by another layer. The interior of these massive structures contains narrow passages, and some totally dark halls or chambers, and probably served as the burial places of the kings who had caused them to be constructed. The entrance to these buildings is raised considerably above the level of the base, and was blocked up by a portcullis of granite, so as to be on ordinary occasions inaccessible. In the pyramid of Cheops, the entrance is raised about 47 feet, 6 inches above the base. The pyramids of Egypt begin immediately S. of Cairo, and continue S. at varying intervals for nearly 70 miles. The largest is that of Cheops, at Ghizeh, standing on a base each side of which was originally 764 feet long, but owing to the removal of the coating is now only 746 feet. Its perpendicular height, according to Wilkinson, was originally 480 feet, 9 inches, present height, 460 feet. The principal chamber, the so-called Crowning Hall or

King's Chamber, is 34 feet, 3 inches long, and 17 feet, 1 inch wide. Its roof is formed of massive blocks of granite, over which, with a view to support the weight, other blocks are laid, with clear intervals between. According to Herodotus, the erection of this pyramid employed 100,000 men for 20 years.

In Mexican antiquities, the Teocallis, or Houses of the Gods, which have come down from Aztec times, are four-sided pyramids rising by terraces to a considerable height. A notable group of such erections still exist at Teotihuacan, about 20 miles N. E. of the City of Mexico. There are two large pyramids, with some hundred smaller ones. The base of the largest is 900 feet long; its height 160 feet; the height of the second is 130 feet. One is dedicated to the sun, the other to the moon. A yet larger one is at Cholula; its base is 1,488 feet long, its height 178 feet. All the Mexican pyramids face the cardinal points. Hence, applied to any mass or heap more or less resembling a pyramid in form.

Pyrenees, an extensive mountain range in the S. of Europe, dividing France from Spain, and extending almost in a straight line from St. Sebastian, on the Bay of Biscay, to Cape Creux, on the Mediterranean. Length 270 miles, with a breadth from 50 to 100 miles.

Pyrites, an isometric mineral occurring frequently crystallized, also massive, in mammillary forms with fibrous structure, and stalactitic with crystalline surface. Luster, metallic, splendent; color, pale, brass-yellow; streak, greenish-black; opaque; fracture conchoidal uneven; brittle; strikes fire when struck with a hammer. Composed of sulphur and iron. It is distributed in rocks of all ages, either as crystals, crystal-grains, or nodules, also in metalliferous veins.

Pyrrhic, a species of warlike dance, which is said to have been invented by Pyrrhus to grace the funeral of his father Achilles. It consisted chiefly in such an adroit and nimble turning of the body as represented an attempt to avoid the strokes of an enemy in battle, and the motions necessary to perform it were looked on as a kind of training for actual warfare. This dance is supposed to be described by Homer as engraved on the shield of Achilles. It was danced by boys in armor, accompanied by the lute or lyre. Also a metrical foot consisting of two short syllables.

Pyrrhus, King of Epirus, being obliged, on the murder of his father, to seek safety by flight, found a home, parent, and tutor in Glaucus, King of Illyria, where he remained for several years, till old enough to maintain his own right, and ascended his father's throne, 295 B. C. In 281 B. C., he made war on the Romans, having been called to the assistance of the Samnites, and, in a desperate battle fought on the banks of the Syris, in Calabria, totally defeated the Roman army; yet, so dearly was this glory bought, that Pyrrhus exclaimed "Another such victory will ruin me." After several signal advantages, the Romans at length triumphed, and Pyrrhus, sustaining many disasters, returned to Greece, and, in a subsequent war with the Argives, was killed, by a tile thrown on his head from the roof of a house, as he entered Argos, 273 B. C.

Pythagoras, the celebrated Greek philosopher, was born in Samos, probably about 580–570 B. C. He was the son of Mnesarchus, and, perhaps, a disciple of Pherecydes. He is said to have traveled extensively, especially in Egypt, and to have been initiated in the most ancient Greek mysteries. He attached great importance to mathematical studies, and is believed to have made several important discoveries in geometry, music, and astronomy. He ultimately settled, between 540–530 B. C. at Crotona, one of the Greek cities of Southern Italy. There he set himself to carry out the purpose of instituting a society through which he might exert an influence on political affairs, and especially in opposition to democratic and revolutionary movements. His teachings relating to these subjects became at length the occasion of a popular rising against the Pythagoreans at Crotona, 504 B. C.— the house in which they were assembled was burned, many perished and the rest were exiled. Similar tumults with similar results, took place in other cities and Pythagoras himself is

believed to have died soon after, at Metapontum. Among the doctrines of Pythagoras are the following: that numbers are the principles of all things; that the universe is a harmonious whole (kosmos), the heavenly bodies by their motion causing sounds (music of the spheres); that the soul is immortal, and passes successively into many bodies (metempsychosis); and that the highest aim and blessedness of man is likeness to the Deity. He left no written account of his doctrines; they were first committed to writing by Philolaus. Pythagoras is said to have been the first who took the title of philosopher, and the first who applied the term kosmos to the universe. He shares with Thales and Xenophanes the high distinction of starting the problem of physical science. He died in Metapontum, Magna Græcia, about 500 B. C.

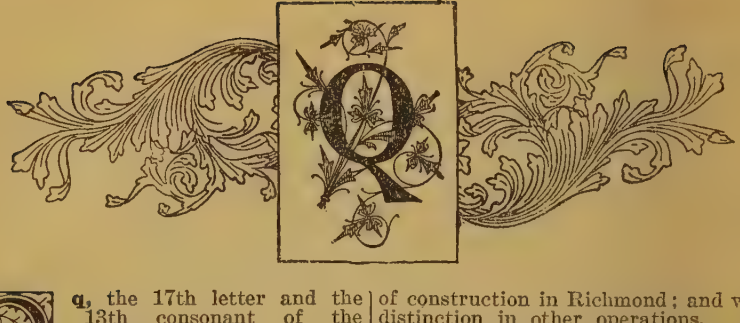
Pythian Games, one of the four great national festivals of the Greeks, held in the Crissæan plain, near Delphi (anciently called Pytho), said to have been instituted by Apollo after vanquishing the snaky monster, Python, and celebrated in his honor every four years.

Pythias, Knights of, a benevolent and friendly order, founded during the Civil War, and now flourishing in various parts of the world. The order is very strong in the United States. Justus H. Rathbone founded Washington lodge No. 1 in Washington, in December, 1864. On Jan. 1, 1900, the total membership of the order was 492,506. Membership of the Uniform Rank (military branch), 45,590. Membership of the Endowment Rank (life insurance branch), 57,401, representing an endowment of $113,840,000. Total paid beneficiaries to July 1, 1900, $14,865,883.

Python, in Greek mythology, a celebrated serpent which destroyed the people and cattle about Delphi, and was slain by Apollo. In zoölogy,

PYTHON: MOLURUS.

rock snake; the typical genus of Pythonidæ. Anterior half of upper side of head covered with symmetrical shields, the under with scales; nostrils between two shields unequal in size. They have a double row of scutes under the tail, and teeth in the intermaxillary bone. They are found in India and Africa.



Q, the 17th letter and the 13th consonant of the English alphabet, a consonant having only one sound, that of k or c. It is always followed by u, and as this combination can be represented by kw (or k when u is silent), q is a superfluous letter.

Quackenbos, George Payn, an American educator; born in New York city, Sept. 4, 1826; was graduated at Columbia College in 1843 and for many years conducted a large collegiate school in his native city. He was author of "First Lessons in Composition"; "Advanced Course of Rhetoric and Composition"; etc. He died in New London, N. H., July 24, 1881.

Quackenbos, John Duncan, an American physician; born in New York, N. Y., April 22, 1848; was graduated at Columbia College in 1866 and at the College of Physicians and Surgeons in 1871; began practice in New York; became Adjunct Professor of the English Language and Literature at Columbia College in 1884; Professor of Rhetoric in Barnard College in 1891–1893. He then became a specialist in mental diseases and lectured extensively on scientific and literary topics.

Quackenbush, Stephen Platt, an American naval officer; born in Albany, N. Y., Jan. 23, 1823; joined the navy in 1840; promoted lieutenant-commander in 1862; had charge of various vessels in blockading fleets during the Civil War; participated in the action at Elizabeth City and Newbern, N. C., captured the "Princess Royal" containing a cargo of machinery for making projectiles, quinine and engines for an iron-clad in course of construction in Richmond; and won distinction in other operations. He was retired with the rank of rear-admiral in 1885. He died in Washington, D. C., Feb. 4, 1890.

Quadrangle, a square or four-sided court or space surrounded by buildings, as often seen in the buildings of a college, school, etc. In geometry, a figure having four angles, and consequently four sides.

Quadrant, in architecture, the same as quadrangle. In geometry the fourth part of a circle; the arc of a circle containing 90°; the space included between such arc and two radii drawn from the center to the extremities of the arc. Nautically, an instrument for making angular measurements. So called from its embracing an arc of 90° or somewhat more. Formerly much employed in making astronomical observations. It is now superseded by the sextant.

Quadrature, the state of being quadrate or square; a square space. In astronomy, the position of one heavenly body with respect to another 90° distant, as the moon when midway between the points of opposition and conjunction. In geometry, the act of squaring; the reducing of a figure to a square.

Quadrilateral, the name given in history to the four fortresses of North Italy — Mantua, Verona, Peschiera, and Legnago — which form a sort of outwork to the bastion of the mountains of the Tyrol, and divide the N. plain of the Po into two sections by a most powerful barrier.

Quadrille, a dance consisting of five figures or movements, executed by four sets of couples, each forming the side of a square. Also, the music

composed for such a dance; and, a game of cards played by four persons with 40 cards.

Quadroon, or Quarteron, a person who is one-quarter negro and three-quarters white; that is, one of whose grandparents was white and the other negro; and one of whose immedite parents was white and the other mulatto.

Quadrumana, in zoölogy, an order of Mammalia, founded by Cuvier, and containing the monkeys, apes, baboons, and lemurs. The earliest known remains are those of Lemuravus, from the Eocene of New Mexico.

Quadruped, the name popularly applied to those higher vertebrate animals which possess four developed limbs. The name is usually restricted to four-footed mammals.

Quadruple Alliance, an alliance, so called from the number of the contracting parties, concluded in 1718 between Great Britain, France, and Austria, and acceded to by Holland in 1719, for the maintenance of the peace of Utrecht. The occasion of the alliance was the seizure by Spain of Sardinia in 1717, and Sicily in 1718, both of which she was forced to give up. Another quadruple alliance was that of Austria, Russia, Great Britain, and Prussia, in 1814, originating in the coalition which had effected the dissolution of the French empire.

Quæstor, in Roman history, two quæstores parricidii, who acted as public prosecutors in cases of murder, or any capital offense, existed in Rome during the period of the kings. Two quæstores classici, who had charge of the public money, were first appointed about 485 B. C. They also had charge of the funds of the army, to which they were paymasters. The number of quæstors was increased to eight, 265 B. C. Sylla raised the number to 20, and Julius Cæsar to 40. During the time of the emperors their number varied; and from the reign of Claudius I. (41–54) it became customary for quæstors, on entering office, to give gladiatorial spectacles to the people; so that none but the wealthiest Romans could aspire to the office.

Quagga, a striped equine form, from South Africa, now nearly, if not entirely extinct.

Quail, the Virginia quail is common throughout North America and extends as far south as Honduras. It is larger than the European quail, and is better eating. The California crested quail is another American species. The quail, genus Coturnix, is widely distributed over the Eastern Hemisphere, visiting Europe in early summer and returning S. in the autumn, when immense numbers are caught and fattened for the market. Length about seven inches, general color reddish-brown, with buff streaks on the upper surface; throat rufous; head, dark brown above, striped with ocherous white, sides reddish-brown, lower parts pale buff, fading into white on belly. Color less bright in the hen bird, and the rufous tinge absent from the throat. They nest on the ground, laying from 9 to 15 pyriform, yellowish-white eggs, blotched with dark-brown. The males are polygamous and extremely pugnacious.

QUAIL: LOPHORTYX CALIFORNICUS.

Quaker City, Philadelphia, which was planned and colonized by William Penn and other members of the Society of Friends.

Quakers. See Friends, Society of.

Quamash, the North American name of a pl nt of the lily family with an edible bulb. These bulbs are much eaten by the Indians, and are prepared by baking in a hole dug in the ground, then pounding and drying them into cakes for future use.

Quantity, in grammar and prosody, the measure of a syllable or the time in which it is pronounced; the metrical value of syllables as regards length or weight in their pronunciation. In logic, the extent to which the predicate in a proposition is asserted of the subject.

In mathematics, anything that can be increased, diminished, and measured. Thus, number is a quantity; time, space, weight, etc., are also quantities. In mathematics, quantities are represented by symbols, and for convenience these symbols themselves are called quantities. In algebra, quantities are distinguished as known and unknown, real and imaginary, constant and variable, rational and irrational. Real quantities are those which do not involve any operation impossible to perform; variable quatities are those which admit of an infinite number of values in the same expression; rational quantities are those which do not involve any radicals.

Quarantine, the period (originally 40 days) during which a ship coming from a port suspected of contagion, or having a contagious sickness on board, is forbidden intercourse with the place at which she arrives. Quarantine was first introduced at Venice in the 14th century. It is now required to be performed in almost every important country except Great Britain. By act of the United States Congress passed in 1879 national quarantine stations were established; and it is made a misdemeanor punishable by fine or imprisonment, or both, for the master, pilot, or owner of any vessel entering a port of the United States in violation of the act, or regulations framed under it. During the period of quarantine, all the goods, clothing, etc., that might be supposed capable of retaining infection, are subjected to a process of disinfection, which is a most important part of the quarantine system.

Quarry, a place, pit, or mine where stones are dug out of the earth, or are separated from the mass of rock by blasting. The term mine is generally confined to pits or places whence coal or metals are taken; quarry to those from which stones for building, etc., as marble, slate, etc., are taken. A mine is subterranean, and reached by a shaft; in a quarry the overlying soil is simply removed.

Quart, the fourth part of a gallon or two pints; the United States dry quart contains 67.20 cubic inches, the fluid quart 67.75 cubic inches; the English quart contains 69.3185 cubic inches.

Quarter, a measure of weight equal to the fourth part of a hundredweight — i. e., to 28 pounds avoirdupois. As a measure of capacity, for measuring grain, etc., a quarter contains eight bushels. The common American term for twenty-five cents, being a quarter of a dollar.

Quarter Deck, in nautical language, a deck raised above the waist and extending from the stern to the mainmast. It is especially a privileged portion of the deck, being the promenade of the superior officers or of the cabin passengers. The windward side is the place of honor.

Quartermaster, in military affairs, an officer who superintends the issue of stores, food, and clothing, and arranges transportation for a regiment when necessary. In nautical affairs, a petty officer, who, besides having charge of the stowage of ballast and provisions, coiling of ropes, etc., attends to the steering of the ship. He is appointed by the captain.

Quartermaster-general, in the United States a staff-officer with rank of Brigadier-General. He is chief officer in the quartermaster's department.

Quartermaster-sergeant, in the United States, one whose duty it is to assist the quartermaster.

Quartet, a piece of music arranged for four voices or instruments, in which all the parts are obligati; i. e. no one can be omitted without injuring the proper effect of the composition.

Quartley, Arthur, an American artist; born in Paris, May 24, 1839

He came to the United States when a boy, and gained a reputation as a decorator, but it was not till after 1875 that he became known as an artist of merit. His first picture which brought him into notice was very large, showing a waste of water beating against a rock. It was exhibited at the Academy of Design, and belongs to Wellesley College. He had a fondness for wild marine and coast scenes. He was elected a National Academician in 1886, and died in New York, May 24 of that year.

QUASSIA: BITTERWOOD.
a, Fruit.

Quarto, name of the size of a book in which a sheet makes four leaves. Frequently abbreviated to 4to. Also a book formed by folding a sheet twice, making four leaves, eight pages. The term, by modern usage, refers to a book of nearly square form. The proportions vary according to the size of the sheets.

Quartz, in mineralogy, a rhombohedral or hexagonal mineral, crystallizing mostly in hexagonal prisms with pyramidal terminations. Found also massive, and of varying texture. Quartz is abundantly distributed, is an essential constituent of many rocks, notably granite, gneiss, various schists, and constitutes the larger part of mineral veins. Many of its varieties are largely employed in jewelry.

Quass, or **Quas,** a thin, sour, fermented liquor, made by pouring warm water on rye or barley meal, and drunk by the peasants of Russia.

Quassia, a tree cultivated in the West Indies and the parts adjacent. It has terminal clusters of large, red flowers, and unequally pinnate leaves. It comes to this country in logs or billets, and is retained as chips or raspings. It is given as an extract, an infusion, or a tincture. An infusion of it is used to poison flies.

Quaternary, or **Post-Tertiary,** the fourth great division of the fossiliferous strata, which embraces the Pleistocene or Glacial and Post-glacial and Recent systems.

Quatrefoil, in architecture, a piercing or panel divided by cusps or foliations into four leaves, or more correctly the leaf-shaped figure formed by the cusps. The name is also given to flowers and leaves of a similar form carved as ornaments on moldings, etc. It differs from the cinquefoil only in the number of cusps. In heraldry, four-leaved grass; a frequent bearing in coat-armor.

Quay, a landing place; a wharf projecting into a stream, harbor, or basin, to which vessels are moored for the purpose of receiving and delivering freight.

QUATREFOIL IN ARCHITECTURE

QUATREFOIL IN HERALDRY.

Quay, Matthew Stanley, an American legislator; born in Dillsburg, Pa., Sept. 30, 1833; was graduated at Jefferson College in 1850, and admitted to the bar in 1854; entered the Union army in 1861 and won distinction; was promoted lieu-

tenant-colonel and assistant commissary general; received a congressional medal of honor for exceptional service; became State treasurer of Pennsylvania in 1885; and was a United States Senator in 1887–1899. Early in the latter year he was placed on trial on charges of misappropriation of public funds, and on April 21 was acquitted. Governor Stone appointed him United States Senator ad interim on the same day, and in January, 1901, he was reëlected to the United States Senate to fill out the vacant term caused by the failure of the Legislature to elect a Senator in January, 1899. His term expires in 1905.

Quebec, a province of the Dominion of Canada, formerly called Canada East; bounded on the N. by Labrador and Hudson Bay; on the E. by Labrador and the Gulf of St. Lawrence; on the S. by New Brunswick, Chaleurs Bay, Maine, New Hampshire, Vermont, and New York; on the S. W. and W. by the province of Ontario; gross area, 347,350 square miles; pop. (1901) 1,648,898; capital, Quebec. The surface of the province is varied, being diversified by mountains, rivers, lakes, and extensive forests. The chief river is the St. Lawrence, which flows through the entire length of the province. The climate is variable, though salubrious, the temperature ranging from 20° below zero in winter to 90° in summer.

The mineral wealth is undeveloped, but is said to be invaluable. Copper is mined in Brome and Megantic counties; gold in Beauce; iron ore in St. Maurice; and nickel in Pontiac. The other mineral productions include asbestos, apatite, plumbago, mica, slatestone, etc.

The soil is generally fertile and is chiefly cultivated near the rivers. About half of the population of Quebec is engaged in agriculture. The chief products include maize, buckwheat, tobacco, peas, turnips, barley, wheat, oats, potatoes, and hay. But little of the forest wealth, which is considerable, has been developed. Spruce and pine are exported and the other forest products include ash, cedar, cherry, oak, elm, maple, birch, and beech. Cattle, horses, swine, and sheep are the principal domestic animals. The fisheries are extensive.

The affairs of the province are ministered by a Lieutenant-Gener appointed by the Governor-General Canada, assisted by a responsible ecutive council. There are t Chambers, the Legislative Coun composed of 24 members who h their appointments for life, and Legislative Assembly, which has members, elected by the people five years. The total government ceipts for 1900 were $4,451,578; to expenditures, $4,433,386.

The city of Quebec was founded Champlain in 1608, who later est lished trading stations and forts various places. The French gove ed Quebec till 1759, when Gene Wolfe won the battles of the Pla of Abraham, and the English gain control. Prior to 1841 Quebec w called Lower Canada, but in th year it was united to Upper Cana It was made a province of the Dom ion of Canada in 1867 by the Act Confederation.

Quebracho, a Chilean tree; bark is used as a febrifuge and lung or bronchial diseases. It called also white quebracho, to disti guish it from the red quebracho, Mexican tree. The bark of the lat is said to have similar properties.

Queen, a female who is chief preëminent among others; one w presides; as, the queen of beauty, t queen of love, etc. In cards, a ca on which a queen is depicted. chess, the most powerful and, aft the king, the most important of the pieces in a set of chessmen.

Queen Adelaide Archipelago, group of islands, belonging to Chil N. of the W. entrance of the Str of Magellan; separated by Smy Channel from King William Land the mainland.

Queen Anne's Bounty, the na given to a fund appropriated to i crease the income of the poorer cler of England, created out of the fi fruits and tenths, which before t Reformation formed part of the pap exactions from the clergy. The fi fruits are the first whole year's pro of all spiritual preferments, and t tenths are one-tenth of their annu profits, both chargeable according the ancient declared value of t benefice; but the poorer livings a

now exempted from the tax. Henry VIII., on abolishing the papal authority, annexed both first fruits and tenths to the crown; and, by an act passed in 1703, these revenues were set aside, with the consent of Queen Anne, to form a perpetual fund for the augmentation of poor livings.

Queen Bee, in entomology, a fully developed female bee in a hive or nest. She lays 2,000 or 3,000 eggs daily during the height of summer, or more than 1,000,000 during her lifetime, which is about five years. When a young queen comes forth, the old one becomes agitated with jealousy, and ultimately quits the hive, surrounded by a great multitude of workers, who found a new colony, leaving the old hive to the possession of the youthful rival. Two days to a week after coming to maturity, the young queen temporarily flies forth, and is fertilized in the air.

Queen Charlotte's Islands, a group to the N. of Vancouver Island, off the coast of British Columbia; area, 5,100 square miles. The two principal islands, Graham and Moresby, have a length of 160 and a greatest breadth of nearly 70 miles. The climate is healthy, but very rainy. Anthracite coal, copper and iron ore, and gold bearing quartz have been found, and forests abound. The inhabitants are about 2,000 Indians, who engage in fishing. Queen Charlotte's Sound is a strait separating Vancouver Island on the N. from the mainland.

Queen's College, for women, was established in London, in 1848, and incorporated by royal charter in 1853. Its aim is to provide for the higher education of women, in the first place by a liberal school training, and subsequently by a six years' course of college education.

Queensland, an Australian colony, comprising the whole N. E. portion of Australia N. of New South Wales and E. of South Australia and its Northern Territory, being elsewhere bounded by the Gulf of Carpentaria, Torres Strait, and the Pacific. A considerable portion is thus within the tropics, the extreme N. part forming a sort of peninsula, known as York Peninsula. It has an area of about 668,497 square miles; pop. 498,523, and is divided into 12 large districts.

There are many kinds of valuable timber trees, and a rare thing in Australia, a few good indigenous fruits. Sheep farming is the chief industry, but agriculture (including sugar-growing), cattle rearing, and mining are also important. The soil and climate are well suited for the production of all the ordinary cereals, as well as maize, tobacco, coffee, sugar, cotton, etc. The chief products are sugar, maize, Irish and sweet potatoes, arrow root, and semi-tropical fruits. Sugar growing is becoming a very important industry. Gold, tin, lead, and copper are the principal minerals. The gold fields extend over an area of 15,000 square miles, and employ about 9,500 miners.

The first settlement of Queensland took place in 1825, when the territory was used as a place of transportation for convicts, who continued to be sent there till 1839. In 1842 the country was opened to free settlers. It was originally a part of New South Wales, and was organized as a separate colony in 1859. The government of the colony is vested in a governor, who is the crown's representative, and a Parliament of two houses, the legislative council and the legislative assembly. The council consists of 39 members appointed by the crown for life, and the assembly of 72 members elected by the people for five years, and representing 60 electoral districts. The capital of the colony is Brisbane. In January, 1896, a disastrous flood caused great loss of life and property in Brisbane and Northern Queensland.

Quelpart, an island 60 miles off the S. coast of Korea; about 40 miles long by 17 broad. It is rock-bound and mountainous, the volcanic Mount Auckland being 6,500 feet high. It has fertile soil and good timber, and is populous.

Quesada, Gonzalo de, a Cuban patriot and diplomatist; born in Havana, Cuba, Dec. 15, 1868; was graduated at the College of the City of New York in 1888; was secretary of the Cuban revolutionary party and associated with Jose Marti in the struggle for Cuban independence. In

1900 he was the special commissioner of Cuba to the United States, and also to the Paris Exposition; in 1901 was a member of the Cuban Constitutional Convention and in the same year was appointed a chevalier of the Legion of Honor of France. He published "Patriotism"; "History of Free Cuba"; etc. He is now Cuban Minister to the United States.

Quesnay, Francois, a French physician and economist; born near Paris, France, June 4, 1694. He was the founder of the school of economists called Physiocrats, and very influential on Adam Smith and all modern political economy. He published several medical works, in addition to his more famous ones on political economy. He died Dec. 16, 1774.

Quezal, a most beautiful Central American bird of the Trogon family. It is about the size of a magpie, and the male is adorned with tail feathers from 3 to 3½ feet in length, and of a gorgeous emerald color. The food of the quezal consists chiefly of fruits. It lives in forests of tall trees. There are several allied species of birds, but none with the distinctive feature of the quezal.

Quichua, the name of a native race of South America, inhabiting Peru, parts of Ecuador, Bolivia, etc. With the Aymaras the Quichuas composed the larger portion of the population of the empire of the Incas. The Quichua language, which was formerly the state language of the Incas, is still the chief speech of Peru, of a large portion of Bolivia, of the part of Ecuador bordering upon Peru, and of the N. section of the Argentine Republic. It is one of the most beautiful and at the same time comprehensive tongues of America.

Quicklime, lime in a caustic state; calcium oxide deprived by heat of its carbon dioxide and water. This is extensively done in lime kilns, the fuel used being fagots, brushwood, or coal. The firewood and lime to be calcined are mixed. Quicklime treated with water evolves much heat, and falls into a thick paste. Lime thus slaked and mixed with sand constitutes mortar.

Quicksand, in its usual significance, a tract of sand which, without differing much in appearance from the shore of which it forms part, remains permanently saturated with water to such an extent that it cannot support any weight. Quicksands are most often found near the mouths of large rivers. Quicksands are not commonly of great extent, and their danger has probably been exaggerated in the popular mind by sensational descriptions in works of fiction. Persons sink in a quicksand exactly as in water, only more slowly; and it is probable that if the victim did not struggle he would not sink over the head, as experiments show that water containing a quantity of solid matter in suspension has its floating powers increased. The name quicksand is sometimes applied to the drifting sands which are carried by wind over cultivated land bordering the seashore or a desert.

Quids, a name given to the few supporters of John Randolph when he seceded from the Republican party in 1805. The Latin phrase tertium quid, a "third something" (as distinguished from the two powerful parties), gave rise to the name.

Quietism, the doctrine that the essence of true religion consists in the withdrawal of the soul from external and finite objects, and its quiet concentration upon God.

Quileute, a tribe of North American Indians, who formerly lived on a river of the same name, in the State of Washington. Their numbers were gradually reduced by wars with other tribes and the few remaining are found in the Neah Bay reservation in Washington.

Quillaia, Quillaja, or **Quillaya,** the typical genus of Quillaiæ. Large evergreen trees, with undivided leaves, five petals, 10 stamens, and five single-celled ovaries. Three or four species are known; all from South America.

Quince, the fruit of Cydonia vulgaris, or the tree itself. It is 15 or 20 feet high, with white or pale-red flowers, and ultimately golden fruit. It is indigenous in the S. of Europe, the N. of Africa, the Himalayas, etc. The fruit is too austere to be eaten uncooked, but is used in the preparation of marmalade, jelly, and preserves. Its mucilaginous seeds are demulcent, and given by the natives

of India in diarrhœa, dysentery, sore throat, and fever. The Japan quince is a small tree about six feet high, with oval crenately serrated leaves, and fine red flowers.

Quincy, Josiah, sometimes called Josiah Quincy, Jr., an American lawyer; born in Boston, Mass., Jan. 23, 1744. He graduated from Harvard in 1763. Though noted as a patriot, he joined with John Adams in defending the British soldiers in the Boston Massacre case; took part in the town meeting ordering the "Boston tea-party"; and in September, 1774, went to England to speak in behalf of the colonists. His best-known works are: "An Address of the Merchants, Traders, and Freeholders of Boston" in favor of a non-importation act (1770), and "Observations on the Boston Port Bill" (1774). He died April 26, 1775.

Quincy, Josiah, an American author and orator; born in Boston, Mass., Feb. 4, 1772, son of Josiah Quincy. He was graduated at Harvard College in 1790, studied law, and entered Congress in 1805, where he distinguished himself as an orator. In 1813 he declined a reëlection, and devoted his attention to scientific agriculture. He became, however, a member of the Senate of Massachusetts, and in 1822, judge of the Municipal Court of Boston. In 1823 he was elected mayor of Boston; and in 1829 accepted the post of president of Harvard College, which he held till 1845. Among his published works are a "Memoir of his Father," "History of Harvard University," "History of the Boston Athenæum," "The Municipal History of the Town and City of Boston." He died in Quincy, Mass., July 1, 1864.

Quinine, the most important alkaloid of the true cinchona bark, first obtained, but in an impure state, by Gomez, of Lisbon, in 1811. It is permanent in the air, inodorous, and very bitter.

Quinoa, a valuable food-plant, a native of Chile and the high tableland of Mexico. In the countries in which it is indigenous it is much cultivated for its seeds, which are made into meal. They form a principal food of the inhabitants.

Quinsy, or **Quinancy,** inflammatory sore throat. There is swelling of one tonsil, or of both, attended with difficulty of breathing and swallowing, and febrile symptoms. Quinsy has, though rarely, proved fatal by producing suffocation.

Quintilian, Quintilianus Marcus Fabius, a Roman rhetorician; native of Spain. His great work is entitled, "On Oratory as an Art," and was written after his retirement, but during the reign of Domitian. It is the most complete course of rhetoric handed down from ancient times, and is distinguished for its elegance of style, as well as for sound judgment, cultivated taste, and various knowledge. The first complete copy of this work was discovered by Poggio, in the abbey of St. Gall, about 1419, and the first printed edition appeared at Rome, in 1470. Quintilian is supposed to have died about A. D. 120.

Quirinal, The, one of the seven hills of ancient Rome, and next to the Palatine and Capitoline, the oldest and most famous quarter of the city. The Quirinal is a name applied to the Italian government from the fact that the king of Italy resides in the palace of the Quirinal.

Quirites, a designation of the citizens of ancient Rome as in their civil capacity. The name of Quirites belonged to them in addition to that of Romani, the latter designation applying to them in their political and military capacity.

Quit-claim, a deed of release; an instrument by which some claim, right or title, real or supposed, to an estate, is relinquished to another without any covenant or warranty, express or implied.

Quitman, John Anthony, an American military officer; born in Rhinebeck, New York, Sept. 1, 1799. Removing to Mississippi in 1821, he ultimately became governor, which he obtained through a vacancy in 1836. He soon after withdrew from political life, and joined the Texans in their struggle for independence. In 1846, he was appointed Brigadier-General of the United States army in the war with Mexico, distinguishing himself at Monterey, Vera Cruz, and Cerro Gordo, after which latter engagement

he was brevetted Major-General, and was voted a sword by Congress for gallantry. He participated in the attack on Chapultepec, and was foremost in the assault on the City of Mexico, which city he governed till order was established. In 1855 and 1857 he was elected to Congress by large majorities. He died in Natchez, Miss., July 17, 1858.

Quito, a city and capital of the republic of Ecuador; on the E. slope of the W. branch of the equatorial Andes; 150 miles from Guayaquil. Manufactures include coarse cotton and woolen goods, hosiery, lace, jewelry, and confectionery. It has a trade in agricultural produce, and exports iron, steel, and indigo. The great danger of Quito is from earthquakes, and from the vicinity of burning mountains, which often break out into the most tremendous eruptions. On Feb. 4, 1797, 40,000 lives were lost through one of the worst eruptions of modern times.

Quoits, a game played with a flattish ring of iron, generally from 8¼ to 9½ inches in external diameter and between one and two inches in breadth.

Quorum, such a number of officers or members of a body as is competent by law or constitution to transact business.

Quo Warranto, in law, a writ issuing against any person or corporation that usurps any office or franchise, to inquire by what authority he or it supports his or its claim, in order to determine the right.

R

r, the 18th letter and the 14th consonant of the English language, is classed as a semi-vowel and a liquid. It is also called a trill. By the Romans r was called the "dog's letter," from its sound resembling the snarling of dogs. The three R's, a humorous and familiar designation for the three elementary subjects of education: reading, writing, and arithmetic.

Ra (more properly Re), the name of the god of the sun among the ancient Egyptians. He is represented, like Horus, with the head of a hawk, and bearing the disk of the sun on his head.

Rabbi, in Jewish history and literature, rabbi is the noun Rab with the pronominal suffix, and in Biblical Hebrew = great man, distinguished for age, rank, office, or skill, where, however, it only occurs without the suffix. In ordinary language it is the designation of a minister of religion of the Jewish faith.

Rabbinic Hebrew, that form of Hebrew in which the Jewish scholars and theologians of the Middle Ages composed their works. Grammatically it differs but little from the ancient Hebrew, but in many cases new meanings are attached to Hebrew words already in use, in other cases new derivatives are formed from old Hebrew roots, and many words are borrowed from the Arabic. The rabbinical literature is rich and well repays study.

Rabbit, a well-known burrowing rodent, with a very wide geographical range. The rabbit is smaller than the hare; its muzzle is slenderer, and the palate larger and narrower. The ears and feet are shorter, the former with a smaller black tip (in some cases it is entirely absent), and the general color is grayer. Domesticated rabbits have been greatly modified by the skill of the breeder; they have increased in size and vary in color, albinos being very common, and forming a separate race. Rabbits form an important article of food.

Raccoon, or **Racoon,** a handsome animal, about the size of a large cat, brown furry hair, tail bushy and ringed; body large and unwieldy, legs short, feet with strong fossorial claws. It is omnivorous and ranges over a large part of North America, where

RACCOON: PROCYON LOTOR.

it is hunted for its fur. The crab-eating raccoon of South America, ranging as far N. as Panama, differs chiefly from the former in the shortness of its fur, and consequent slender shape.

Race, a class of individuals sprung from a common stock; the descendants collectively of a common ancestor; a family, tribe, nation, or people belonging, or supposed to belong, to the same stock.

The human family, according to Blumenbach, comprises five distinct races of men, viz.: The Caucasian, or white race, inhabiting Southwestern

Asia, the greater part of Europe, large portions of North and South America, and Australia; the Ethiopian, black or negro race, occupying tropical and Southern Africa, some of the Pacific islands, part of Australia, and portions of North America, into which they were originally brought as slaves; the Mongolian, or yellow race, occupying Northern and Eastern Asia; the Malayan, or brown race, inhabiting the islands of the Indian and Pacific Oceans, the Australian continent, and the Malay Peninsula; and the American Indian, or red race, of North and South America.

Race Horse, a blood-horse, specially bred for racing or steeple-chasing.

Rachel, the second daughter of Laban, the dearly beloved of Jacob, who, to obtain her, devoted seven years to the flocks and herds of her father. But, at the end of that period, he found in his veiled bride not Rachel but Leah, the elder sister, whom he did not love, and was obliged to labor during seven more years in order to gain her. She was the mother of Joseph and Benjamin.

Rachel, Eliza Rachel Felix, a French actress; born in Muraph, Switzerland, Feb. 28, 1820; was the daughter of a Hebrew pedlar. Mademoiselle Rachel completely revived the classic school of tragedy which had fallen into decay, though her crowning triumph was gained in 1843, in her representation of "Phedre." In 1855 she made a professional visit to the United States, but she was interrupted in the middle of great success by the failure of her health, returned to France, and died of consumption in Cannes, near Toulon, Jan. 3, 1858.

Racine, Jean, an eminent French dramatic poet; born in La Ferte Milon, France, Dec. 22, 1639, and was educated at Port Royal. He commenced his poetical career in 1660, by an ode on the king's marriage, for which he was handsomely rewarded. In 1688 appeared his "Andromarque," which placed him far above all his contemporaries except Corneille; and his fame was still further increased by the production of "Britannicus," "Berenice," and other tragedies. After a lapse of 12 years he wrote, by desire of Louis XIV. and Madame de Mai tenon, the sacred dramas of "Esther and "Athalie," which were performe by the young ladies of the institutio of St. Cyr. He died April 21, 169

Rack, an apparatus for the judicia torture of criminals or suspected pe sons. It consisted of a large, ope wooden frame, within which the perso to be tortured was laid on his back o the floor, with his wrists and ankl fastened by cords to two rollers the ends of the frame. These rolle were then drawn or moved in opposi directions till the body rose to a lev with the frame. Interrogations we then put, and if the prisoner refuse to answer, or if his answers were n considered satisfactory, the rolle were further moved, until at last t bones of the sufferer were forced fro their sockets. The rack was forme ly much used in Europe by the civ authorities in the cases of traitors conspirators, and by the officers the Inquisition to force a recantatio of heretical or so-called heretical opi ions. There is no record of the rac having been used under British or i dependent rule in the present Unite States.

Racket, the instrument with whic players at tennis or rackets strike th ball; a bat, consisting of an ellipitic loop formed of a thin strip of woo across which network of cord or gu is stretched, and to which a handl is attached.

Rackets, a game played in a pr pared court, open or close, with small hard ball and a bat like th used for playing tennis.

Radcliffe College, an education non-sectarian institution in Cam bridge, Mass., for women; founde 1879.

Radford, William, an America naval officer; born in Fincastle, Va March 1, 1808; entered the navy i March, 1825; served in the war wit Mexico, and conducted the party whic in 1847 cut out the "Malokadel," Mexican war vessel, at Mazatla When the Civil War broke out he wa assigned to the "Cumberland"; wa promoted captain in July, 1862, an commodore in April, 1863. During th assault on Fort Fisher, in Decembe 1864, he commanded the "New Iro

sides" and the ironclad portion of Porter's fleet. Radford was promoted to rear-admiral in July, 1866, and was retired on March 1, 1870. He died in Washington, D. C., Jan. 8, 1890.

Radiant, in botany, diverging from a common center, like rays. In heraldry an epithet applied to any ordinary or charge, when it is represented edged with rays or beams; rayonnant; reyonnee. In astronomy, the point in the heavens from which a star shower seems to proceed. In geometry, a straight line proceeding from a given point or fixed pole, about which it is conceived to revolve. In optics, the luminous body or point from which rays of light falling on a lens or mirror diverge.

Radiation, in physics, the transmission of heat, light, or actinic power (hence known as forms of "radiant energy") from one body to another without raising the temperature of the intervening medium. It takes place in all directions around a body. In a homogeneous medium it takes place in straight lines.

Radical, in chemistry, a group of elements common to a more or less numerous series of allied compounds, and unaffected by the processes whereby these compounds are transformed one into another.

Radical, a political term, applied in the past to Republican extremists. It is applied in England to extreme members of the Liberal party.

Radiograph, a picture of an object or objects obtained by means of the Roentgen rays instead of light rays; called also skiagraph.

Radiometer, an instrument that is used for taking the altitudes of the celestial bodies. Also an instrument invented by Crookes for measuring the mechanical effect of radiant energy.

Radish, the garden radish. It was cultivated in ancient times in India, whence it found its way to Europe and the United States.

Radium, a recently discovered element with marvelous properties. By the light emitted from it photographs can be taken as with the Roentgen rays, and the photographs show the bones in the hand, or the coins in a pocketbook.

The astonishing feature of radium is that in spite of its enormous activity, which is in the form of minute corpuscles thrown off at the speed of 120,000 miles a second, it does not appreciably diminish in substance. This suggests the possibility that, at last, the long-sought agent which will give light without heat, or combustion, has been found. The discoverers say, however, that radium is extremely rare. It takes enormous quantities of pitchblende to yield a minute quantity of radium. At present, a piece of radium a seventieth part of a grain in weight, costs two dollars; so that a pound, if it could be had, would be worth nearly a million dollars.

Radius, in anatomy, the outer of the two bones of the forearm. In botany, and plural form, the peduncles supporting the partial umbels in an umbellifer. In fortification, a line drawn from the center of the polygon to the end of the outer side. In geometry, the distance from the center of a circle to any point of the circumference.

Radix, in algebra, the root of a finite expression from which a series is derived. In anatomy, the root or portion of anything inserted into another, as the root of a tooth. In botany, the root of any plant. In philology, a primitive word from which other words spring; a root, a radical.

Raff, Joachim, a German composer; born in Lachen, on Lake Zurich, May 27, 1822. From 1850 to 1856 he lived near Liszt in Weimar, then taught music at Wiesbaden till 1877; and from that year till his death, June 24, 1882, he was director of the musical conservatory at Frankfort-on-Main. He published more than 200 musical productions, including symphonies, overtures, concertos for violin, 'cello, and piano, operas, quartettes, a great variety of pieces for piano and violin, and for piano alone.

Raffle, formerly a game of dice; one with three dice in which he who threw all alike won the stakes. Now a chance or lottery in which some article is put up by the owner to be drawn or thrown for by several persons who subscribe a small sum each, he who draws or throws the winning

number to become possessor of the article. The money subscribed goes to the original owner of the article.

Rafinesque, Constantine Samuel, an American botanist; born in Galatz, Turkey, in 1784. He settled permanently in the United States in 1815, and was made Professor of Botany in Transylvania University, Lexington, Ky., in 1818. Later, after lecturing in various places, he removed to Philadelphia. His publications include "Ancient History, or Annals of Kentucky," "Medical Flora, etc., of the United States," etc. He died in Philadelphia, Pa., Sept. 18, 1842.

Raft, a sort of float or framework, consisting of logs or other pieces of timber fastened together side by side, for convenience in transporting them down rivers, across harbors, etc. Also a floating structure made and used in the emergency of shipwreck.

Ragged Schools, a name applied to institutions founded during the 19th century for the moral reclamation and Christian instruction of the juvenile and adult necessitous poor in England.

Ragout, a dish of meat stewed and highly seasoned.

Rabozin, Zenaide Alexeievna, a Russian-American Oriental writer; born in Russia, in 1835. She came to the United States in 1874. Her most important books are: "The Story of Chaldea," "The Story of Assyria," "The Story of Media, Babylon and Persia," etc.

Rags, though valueless for most purposes, are yet of great importance in the arts, particularly in paper making. Besides the rags collected in the United States, the article is imported in large quantities from various foreign countries. Woolen rags, not being available for paper, are much used for manure; but those of a loose texture, and not too much worn, are unraveled by means of machinery, and mixed up with good wool, to form what is known as "shoddy," with which cheap woolen goods are made; while the refuse is pulverized and dyed various colors, to form the flock used by paper stainers for their flock-papers.

Raiatea, one of the Society Islands in Southeastern Polynesia; area, 75 square miles; pop. 1,400, who have been converted to Christianity by English missionaries, and are governed by their own chiefs.

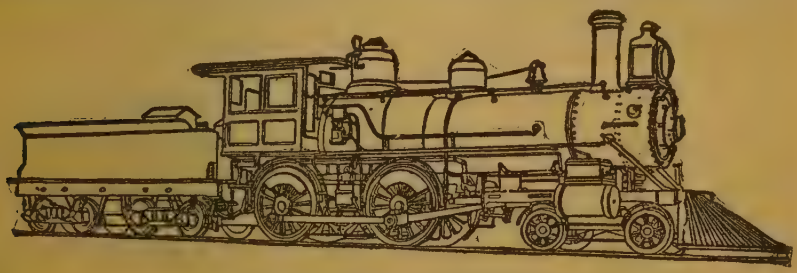
Rail, the common name of a family of grallatorial birds comprehending the rails proper, the coots, water-hens, and crakes. They are characterized by possessing a long bill, which is more or less curved at the tip and compressed at the sides, by having the nostrils in a membranous groove, the wings of moderate length, the tail

WATER RAIL.

short, the legs and toes long and slender, the hind toe placed on a level with the others. Most of the members of the family are aquatic, or frequent marshes; but some, as the crakes, frequent dry situations. The Virginian rail of the United States is somewhat smaller than the water rail of Europe; and the great-breasted rail or freshwater marsh hen is about 20 inches long, and inhabits the marshes of the Southern States of the United States. The land rail, so named, is the corn crake.

Railroad (the usual form in the United States), or **Railway** (the European form), a road or way provided with rails of iron or steel, on which the wheels of the cars run in order to lessen the friction. The "rails" were originally of timber, laid straight and parallel on transverse sleepers, and secured with pegs of wood, the sleepers being imbedded in the material of the roadway; the wheels had flanges on one side of the periphery to confine them to the track. The roadway was scantling, five by seven, pegged down to oak sleepers, four by eight, six feet long, and laid two and a half feet apart. The track for the

horses was filled in with ashes above the sleepers. Such roads were first laid near Newcastle, England, in 1602. About 1716 the wooden ways were capped with thin plates of malleable iron, having flanges along one side. Cast-iron bars were substituted in 1767. The modern railway consists of one or more series of iron or steel rails, laid parallel and continuously at a certain distance or width from each other, called the gauge. One pair of parallel rails constitutes a single track of railway, two pairs a double track, and so on. Railway development in the United States has had to adapt itself to the needs of a new and rapidly growing country, a large part of which was first made available for settlement by railways. Three locomotives were imported from England in 1829, and the first trial

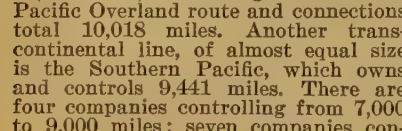


MODERN AMERICAN LOCOMOTIVE.

in America took place Aug. 8, 1829, at Honesdale, Pa. The first railway constructed to be worked by locomotives was the South Carolina railroad (1826–1830), though trials of an experimental locomotive had been made before on the Baltimore and Ohio railroad, which continued to be worked by horsepower till 1832. The mileage of railway construction about kept pace with that of Great Britain till 1850; at the beginning of 1885 it amounted to 125,379 miles. The mileage completed amounted to 40 miles at the end of 1830, to 3,361 miles in 1841, and to 5,206 miles in 1847, of which 1,350 miles had been opened within six years. Then there was a sudden and great increase, the yearly additions for seven years being 1,056 miles in 1848, 1,048 in 1849, 1,261 in 1850, 1,274 in 1851, 2,288 in 1852, 2,170 in 1853, 3,442 miles in 1854. The Civil War checked railway construction, only 3,257 miles being opened during the five years ending with 1865, when the aggregate amounted to 32,996 miles. Between 1865 and 1873, the mileage increased more than 100 per cent. including one road in operation and a second line in progress of construction to the Pacific coast. The greatest increase of this period was in the Western and Southwestern States, in which fully 25,000 miles of trackage were made ready for traffic. At the close of 1873 the total capital invested in railroads of the United States aggregated $3,784,543,034, of which $1,836,904,450 represented the bonded indebtedness. The depression which followed the panic of that year continued till 1879. In the latter year the construction again increased 100 per cent., and between 1874 and 1888, there were built 85,814 miles of new railroad. Since the revival of railroad construction in 1879 there have been completed sufficient miles of road to give a total length of 250,362 miles. This does not include the elevated steam and electric railroads in the various large cities of the country.

Railroad Systems. The process of absorption of smaller concerns by large corporations is fully as marked among the railroads as it is among the great manufacturing industries. The growth in mileage of the largest roads is truly phenomenal, and it will surprise our readers to learn that on this continent there are three separate systems, each of which has a total mileage which is almost half as great as

the total mileage of Great Britain. The largest aggregation controlled by any one company is that of the New York Central railroad, which totals 10,410 miles; making a very close second is the Pennsylvania system with 10,392 miles, while the great Canadian Pacific Overland route and connections total 10,018 miles. Another transcontinental line, of almost equal size is the Southern Pacific, which owns and controls 9,441 miles. There are four companies controlling from 7,000 to 9,000 miles; seven companies con-



EARLY LOCOMOTIVE.

trolling from 5,000 to 7,000 miles; three companies from 3,000 to 5,000 miles; and nine companies controlling from 2,000 to 3,000 miles of track, the total mileage controlled by 28 companies being nearly 150,000 miles. Of the five great transcontinental companies the Canadian Pacific and the Southern Pacific, with over 10,000 and 9,000 miles respectively, are by far the largest. The Atchison, Topeka, and Santa Fe comes next with 7,880 miles, followed by the Union Pacific with 5,584, the Northern Pacific with 5,449 and the Great Northern with 5,201 miles of track.

Raimondi, Marcantonio, an Italian engraver; born in Bologna, Italy, late in the 15th century. He copied on copper two sets of plates from Albrecht Durer's designs for the "Life of the Virgin" and the "Passion of Christ." At Rome, where he worked from 1510, he was chiefly engaged in engraving Raphael's works. On account of the power of his drawing and the purity of his expression, he is accounted the best among the engravers of the great painter. The capture of Rome by the Constable Bourbon in 1527 drove Marcantonio back to Bologna, where he probably remained till he died, some time before 1534.

Rain, in meteorology, the fall of water in drops from the clouds, or the drops which fall. A cloud consists of aqueous vapor, the individual vesicles of which are very small. When by the constant condensation of fresh aqueous vapor these vesicles become large and heavy, and several of them unite, they are unable to resist the action of gravity and fall as rain.

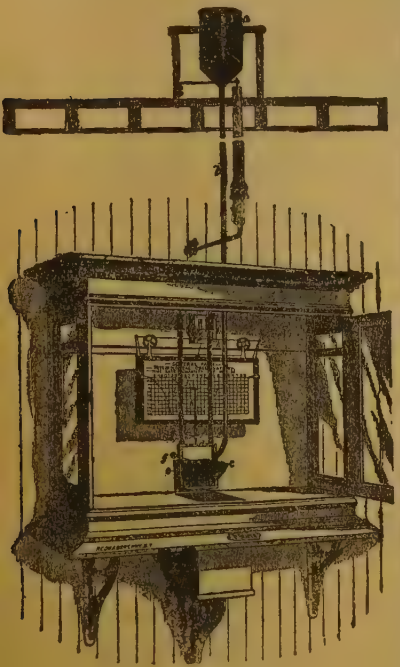
Rainbow. The rainbow is the best known of all optical meteorological phenomena, consisting of a colored arch formed opposite the sun on falling raindrops, and visible whenever the necessary conditions of a passing shower on one side and a clear and not too high sun on the other occur. Two bows are frequently seen, each exhibiting the full spectrum of colors from red to violet; but in the inner or primary bow the red is the outer edge and violet the inner, while in the outer or secondary bow the order is reversed; the red being inside and the violet on the exterior. The colors are always arranged in a definite order, that of the solar spectrum — viz., red, orange, yellow, green, blue, indigo, and violet, but shade imperceptibly into each other.

Rain Gauge, an instrument or contrivance for measuring the amount of rain which falls on a given surface.

Rainier, Mount, a mountain of volcanic origin, the highest in the State of Washington, 14,520 feet high. It is a part of the coast range near Puget Sound, E. of Tacoma, and is sometimes called by the name of the city. The first ascent was made in 1870.

Rain Making. Various attempts have been made in sections of many countries subject to long periods of drought to produce artificial rain, or more properly to force the fall of rain out of its due season. The great majority of experiments have been conducted on the theory of concussion from explosions. In 1891, the Congress of the United States made an appropriation for a series of experiments in Texas, with the view of ascertaining whether means could be provided for relieving the arid territory of the Western and Southwestern States. The experi-

ments were conducted by General Dryenforth for the Department of Agriculture, and were watched with much interest by both scientists and agriculturists. Scientists generally pronounced the experiment a failure.



RAIN GAUGES.

Rainsford, William Stephen, an American clergyman; born in Dublin, Ireland, Oct. 30, 1850; was graduated at St. John's College, England; made missionary tours in the United States and Canada; was assistant rector of St. James Cathedral, in Toronto, and became rector of St. George's Church, New York city, in 1883. Dr. Rainsford became widely known by his earnest advocacy of what has become popularly known as the "institutional church." He has done much to supply wholesome recreation for the young of both sexes in the vicinity of his church, who were without the means to secure it for themselves.

Rain Tree, a leguminous tree of tropical America, now largely planted in India for the shade it furnishes, and because it flourishes in barren salt-impregnated soils.

Rainy Lake, a sheet of water forming a portion of the boundary line between Ontario and the United States, W. of, and 100 miles distant from the nearest point, of Lake Superior, and about 50 miles long.

Raisins, grapes dried in the sun. Inferior qualities are dried in an oven. Raisins are extensively produced in California. They are slightly refrigerant. In the United States they are used to sweeten preparations, in India they are given as a medicine.

Rajah, originally, a title which belonged to princes of Hindu race who, either as independent sovereigns or as feudatories, governed a territory.

Rakoczy March, a simple but grand military air by an unknown composer, dating from the end of the 17th century, said to have been the favorite march of Francis Rakoczy II. of Transylvania. The Hungarians adopted it as their national march, and in 1848 it is alleged to have had the same inspiriting effect on the revolutionary troops of Hungary as the "Marseillaise" had on the French.

Raleigh, a city, capital of the State of North Carolina, and county-seat of Wake co.; on the Southern and Seaboard Air Line; 28 miles S. E. of Durham. Here are the State Capitol, United States Government Building, State Penitentiary, State Institution for the Deaf and Dumb and the Blind, State Asylum for the Insane, Home for Incurables, etc. Pop. (1900) 13,643.

Raleigh, The, a United States twin-screw, steel, protected cruiser. The "Raleigh" has a historic record through its service at the battle of Manila Bay, May 1, 1898.

Raleigh, Sir Walter, an English soldier, colonist, and philosopher; born in Budleigh, Devonshire, England, in 1552. He entered into the troop of gentlemen volunteers who went to the assistance of the Protestants in France, where he continued about five or six years. He subsequently joined

the expedition of General Norris to the Netherlands, in aid of the cause of the Prince of Orange. Soon after his return he engaged with his half-brother, Sir Humphrey Gilbert, in a voyage to America, whence they returned in 1579. On his return to England he introduced himself to the notice of Queen Elizabeth by a romantic piece of gallantry. Her majesty, while taking a walk, stopped at a muddy place, hesitating whether to proceed or not; on which Raleigh took off his new plush cloak and spread it on the ground. The queen trod gently over the foot-cloth, and soon rewarded the sacrifice of a cloak with a handsome suit to the owner. Having obtained from Elizabeth an ample patent over an extensive region, he sent forth two ships, under Captains Amadas and Barlow, which reached the shores of North Carolina in July, 1584, and proceeded N. to Virginia. The name last mentioned was given to the new country in honor of the "Virgin Queen." Raleigh's patent was confirmed by Act of Parliament. He was elected along with Sir William Courtenay, for his native shire.

A joint-stock company was formed by Sanderson, a merchant of London, Raleigh and Sir Adrian Gilbert, another of his half-brothers, to find the Northwest Passage. The voyages of Davis to the Arctic Seas were made under their auspices. But Raleigh and his partners set a fleet to Virginia, under his relative, Sir Richard Grenville. A party of intending colonists, with Ralph Lane at their head, were landed at Roanoke. Raleigh himself never visited his settlement in Virginia, but he sent thither, in 1587, a fresh party of settlers, who founded the city of Raleigh, now capital of North Carolina.

In the defeat of the Spanish Armada, in 1588, Sir Walter bore a glorious part. In 1591 he sailed on an expedition against the Spanish fleet. About the same time he incurred the queen's displeasure by an intrigue with one of her maids of honor, whom he afterward married. In 1595 he sailed to Guiana, and destroyed the capital of Trinidad. The year following he took a distinguished part in the taking of Cadiz. In the succeeding reign, his fortunes changed. He was stripped of his preferments, tried, and condemned for high treason, without the least evidence. He remained in the Tower of London 13 years, during which time he wrote several works. His release in 1615, was occasioned because of the flattering account he had given of some rich mines in Guiana. On gaining his liberty, he sailed to that country where he burned the Spanish town of St. Thomas, and returned to England. In consequence of a complaint of the Spanish ambassador, he was apprehended, and, in a most unprecedented manner, beheaded, on his former sentence. He died in London, England, Oct. 29, 1617.

Ralph, Julian, journalist; born in New York, May 27, 1853; died 1903. He was connected with the New York "Sun," the New York "Journal," and London "Daily Mail."

Ram, in machinery, the weight of a pile or post driver. In nautical language: (1) A beak of iron or steel at the bow of a war-vessel. (2) A steam ironclad, armed at the bow below the water-line with such a beak.

Ramadan, the ninth month in the Mohammedan year. In it Mohammed received his first revelation, and every believer is therefore enjoined to keep a strict fast throughout its entire course, from the dawn to sunset. During the night, however, the most necessary wants may be satisfied — a permission which, practically, is interpreted by a profuse indulgence in all sorts of enjoyments.

Ramayana, the name of one of the two great epic poems of ancient India.

Rameses, or **Ramses,** the name of several Egyptian monarchs, some of whom were known to the Greek and Roman writers and the chronologists; the name signifies "born of the sun," or the "nascent sun." The exploits of Rameses, are confounded by the Greek and Roman authors with those of Sesostris, and mingled in the legend of Aramais, the Danaus of the Greeks. He is the supposed Sesostris of most authors, and his sarcophagus and mummy were found in Egypt in 1890. Rameses III. was the chief of the 20th dynasty. He founded the magnificent pile of edifices of Medinat Habu, embellished Luxor, Gurnah, and other

arts of Egypt. In 1889 the sarcophgus and mummies of himself and is queen were discovered in Egypt in marvelous state of preservation. Rameses IV. reigned a short time and performed no distinguished actions. Rameses V., of whom inscriptions are found in Silsilis. Rameses VI., whose tomb at the Biban-El-Meluk contains some astronomical records, from which the date of his reign has been calculated at 1240 B. C. Rameses VII., VIII., IX., X., and XI., undistinguished monarchs. Rameses XII., who reigned above 33 years. Rameses XIII. was an important monarch. Rameses is also the name of one of the fortresses or treasure cities built by the Hebrews during their residence in Egypt.

Ramil, a plant producing what is popularly known as China grass. China has been making ramil fabrics since the time of Confucius, and the ancient Romans wore robes woven of its silky floss. The plant does well in the S. part of the United States and a finer fiber can be grown there than in the tropics. In such a climate the fiber is long, silky and brilliant, and textiles made from it are stronger than linen and have the luster of silk.

Ramirez, Ignacio, a Mexican philosopher; born in San Miguel el Grande, June 23, 1818. He was of pure Aztec blood. He died in Mexico, June 15, 1879.

Rampart, in fortification, an elevation or mound of earth round a place, capable of resisting cannon shot, and on which the parapet is raised.

Rampolla, Mariano del Tindaro, an Italian clergyman; born in Polizzi, Sicily, Aug. 17, 1843. On the decease of Cardinal Jacobini, the papal Secretary of State, in 1887, Pope Leo XIII. created Rampolla a cardinal and also appointed him Papal Secretary of State. His principal object was a political alliance with France. The Dreyfus affair, having given to the French policy a different turn, destroyed entirely the plan he had so laboriously set to work. After the death of Pope Leo XIII. Rampolla was a prominent candidate for the papal office, but failed to obtain the necessary number of votes.

Ramsay, Allan, a Scotch poet; born in Leadhills, Lanarkshire, Scotland, Oct. 15, 1685. His fame reached its acme on the production of "The Gentle Shepherd," one of the finest dramatic pastorals ever penned. Ramsay died in Edinburgh, Jan. 7, 1758.

Ramsay, David, an American physician and historian; born in Lancaster co., Pa., April 2, 1749. He studied medicine in Philadelphia and practised in Charleston, S. C. From 1776 to 1785 he distinguished himself in a political capacity, first as a member of the legislature of South Carolina, and afterward as a member of Congress. He labored zealously with his pen to promote the cause of independence of his country. He died in Charleston, S. C., May 8, 1815.

Ramsay, Francis Munroe, an American naval officer; born in Washington, D. C., April 5, 1835; appointed a midshipman, Oct. 5, 1850; became a rear-admiral in 1894; and was retired on reaching the age limit, April 5, 1897. He served through the Civil War with much credit. He was superintendent of the United States Naval Academy in 1881–1886; and chief of the Bureau of Navigation in 1889–1897. In September, 1901, he was selected to succeed Rear-Admiral Henry L. Howison on the Schley Court of Inquiry.

Ramsden, Jesse, an English mathematical instrument-maker; born in Salterhebble, near Halifax, Yorkshire, England, in 1735. About 1755 he moved to London, and shortly afterward began to work as an engraver. His skill recommended him to the mathematical instrument-makers. He so improved the sextant that its range of error was diminished from 5 minutes to 30 seconds. He died in Brighton, England, Nov. 5, 1800.

Ramsey, Alexander, an American statesman; born near Harrisburg, Pa., Sept. 8, 1815. He studied law and began practice at Harrisburg in 1839. After filling several public offices he was a member of Congress in 1843–1847; appointed governor of the Territory of Minnesota in 1849 and 1859; Secretary of War in 1879. A member of the Utah Commission in 1881. Died 1903.

Ramsey, Marathon Montrose, an American educator; born in Newton, Mass., in 1867; was graduated at

Columbia University in 1894. He was the principal translator for the International American Conference in 1889–1890, and served as a special clerk for the collection and classification of information on foreign military subjects in 1890–1894. In the latter year he accepted the chair of Romance Languages at Columbia University. He was director of the Columbian Summer School in 1898–1900.

Ranavalona III., a former Queen of Madagascar; born in 1861. She succeeded Queen Ranavalona II. in 1883, having been nominated by her as the future queen. She married the prime minister, Rainilaiarivony (deposed in 1895 and deceased in 1896) soon after ascending the throne. She was crowned in November, 1883. Her kingdom and capital were taken by the French in 1895, and the country was made a French colony. She is not permitted to live in Madagascar, being kept in exile under surveillance.

Rance, Armand Jean le Bouthillier de, the founder of the reformed order of La Trappe; born in Paris, France, Jan. 9, 1626. Residing at Paris, he gave himself up to a life of dissipation. In 1657, however, a marked change took place in his character. He demitted all his benefices except the priory of Boulogne and the abbey of La Trappe. Retiring to the latter place in 1664, he began those reforms which have rendered his name famous. He died in Soligny-la-Trappe, Orne, France, Oct. 12, 1700.

Ranching, the business of cattle-breeding as pursued on a large scale in the unsettled districts of the United States from the Mississippi to the Pacific coasts, and from the Bad Lands of the Upper Missouri to the Gulf of Mexico. The name is derived from the Spanish rancho, properly "mess" or "mess room," but used in Mexico also for a herdsman's hut, and finally for a grazing farm.

Rand, Edward Augustus, an Episcopal clergyman and writer of juvenile books; born in Portsmouth, N. H., April 5, 1837; was graduated at Bangor Theological Seminary, and entered the Episcopal ministry. He wrote "Pushing Ahead"; "Two College Boys"; etc.

Rand, The, or **White Waters Range,** a small tract of land, extending 25 miles either side of Johannesburg, South Africa, and famous for its mineral wealth. The reefs are accessible and rather easily worked. The deposits are unique in their unparalleled persistence of ore, which is interspersed in the quartz and sandstone. It is not of very high quality, yielding about $10 per ton. Since its discovery in 1885, the Rand has yielded $400,000,000 in gold, and just before the war was yielding at the rate of $100,000,000 a year, or one-third of the world's production. The reefs are over a mile deep, and conditions favor deep mining.

Randall, Alexander Williams, an American statesman; born in Ames, N. Y., Oct. 31, 1819; was admitted to the bar and began practice in Waukesha, Wis., in 1840; became postmaster there, and in 1847 was elected to the convention that framed the State constitution. He was elected to the State Assembly in 1855; governor of Wisconsin in 1857 and in 1859, and was appointed United States Minister to Italy in 1861. On his return he was made assistant postmaster-general. He died in Elmira, N. Y., July 25, 1872.

Randall, Emilius Oviatt, an American author; born in Richfield, O., Oct. 28, 1850; was graduated at Cornell University in 1874; was admitted to the bar in 1890 and accepted the chair of law at the Ohio State University in 1893; became secretary of the Ohio State Archæological and Historical Society in 1894, and official reporter of the Ohio Supreme Court in 1895.

Randall, George M., an American military officer; born in Ohio, Oct. 8, 1841. He was graduated at the United States Military Academy, and commissioned 2d lieutenant in the 4th Infantry in 1861; served through the Civil War. In the war with Spain he was commissioned a Brigadier-General of volunteers, May 4, 1898; was honorably discharged under this commission on April 12, 1898; was reappointed Brigadier-General, Jan. 20, 1900; and on the reorganization of the regular army in February, 1901, was promoted Brigadier-General, U. S. A.

Randall, James Ryder, an American journalist and composer; born in Baltimore, Md., Jan. 1, 1839; was educated at Georgetown College, D. C. He gave powerful aid to the Southern cause by his lyrics. These include, besides "Maryland, My Maryland," "Stonewall Jackson"; "There's Life in the Old Land Yet"; etc. He is now private secretary to Hon. William H. Fleming.

Randall, Samuel Jackson, an American statesman; born in Philadelphia, Pa., Oct. 10, 1828. In 1862 he was elected to Congress, serving continuously till his death. He was Speaker of the House, 1876–1881. Died in Washington, D. C., April 12, 1890.

Randolph, Alfred Magill, an American clergyman; born in Winchester, Va., Aug. 31, 1836; was graduated at William and Mary College in 1855 and at the Virginia Theological Seminary in 1858; was ordained in the Protestant Episcopal Church. He was a chaplain in the Confederate army in 1863–1865, and was pastor of Emmanuel Church, Baltimore, Md., in 1867–1883. In the latter year he was elected assistant bishop of Virginia.

Randolph, Edmund Jennings, an American statesman; born in Williamsburg, Va., Aug. 10, 1753; studied at William and Mary College, and was admitted to the bar. In 1776 he helped to frame the constitution of Virginia, and became the State's first attorney-general. In 1786–1788 he was governor of Virginia, and in 1787 a member of the convention which framed the Constitution of the United States. In 1789 he was appointed by Washington Attorney-General of the United States. In 1794 he was made Secretary of State. Died in Clarke co., Va., Sept. 13, 1813.

Randolph, John, "of Roanoke," an American statesman; born in Cawsons, Chesterfield co., Va., June 2, 1773. He claimed descent from Pocahontas, the Indian princess. He was educated for the legal profession, which, however, he never followed, devoting his attention to politics. In 1799, he was elected to Congress. His opposition to the War of 1812 caused his defeat in the following election; but he was reëlected to Congress in 1814, where he remained for several years. From 1825 to 1827 he was a United States Senator. In 1829 he was a member of the convention for revising the constitution of Virginia, and the year following was appointed United States minister to Russia. On his return, he was again elected to Congress, but was unable to occupy his seat. He died in Philadelphia, Pa., June 24, 1833.

Randolph, Sarah Nicholas, an American writer, great-granddaughter of Thomas Jefferson; born in Edge Hill, Va., Oct. 12, 1839. Deceased.

Randolph-Macon College, an educational institution in Ashland, Va.; founded in 1830, under the auspices of the Methodist Episcopal Church, South.

Rangoon, the capital of Lower Burma, and the chief seaport of Burma, at the junction of the Pegu, Hlaing or Rangoon, and Pu-zundoung rivers; about 21 miles from the sea. Since its occupancy by the British in 1852 Rangoon has undergone such changes that it is practically a new town, and its population has increased five-fold. The principal streets are broad, and contain many large and not a few handsome buildings; there is a government dockyard, and steam cars have been introduced. Population, 180,324.

Ranjit, Singh, the founder of the Sikh kingdom in the Punjab, India; born in Gujranwala, Nov. 2, 1780. He was the son of a Sikh chief. He began while young to show his ambition and capability for rule. He procured from an Afghan prince, as the price of his assistance in war, the famous Koh-i-nur diamond. He died June 27, 1839.

Rank, in the army and navy, a grade of various officers established by law, each one carrying distinct rights, privileges, and emoluments.

Ranke, Leopold von, a German historian; born in Wiehe, between Gotha and Halle, Dec. 21, 1795. The works, "A History of the Roman and German People from 1494 to 1535," and "A Criticism on Modern Historians," procured him a call to Berlin as Professor of History in 1825. In 1827 he was sent by the Prussian government to consult the archives of Vienna, Venice, Rome, and Florence;

four years he spent in this work, and returned with a mass of the most valuable historical materials. The results of his labors were seen in "The Princes and Peoples of Southern Europe in the 16th and 17th Centuries," and other books dealing with Servia, Turkey, and Venice; and "The Roman Popes in the 16th and 17th Centuries," one of his great masterpieces of historical writing. Then he turned his attention to Central and Northern Europe. He began his "Universal History" when he was an old man of 82; he kept two schooled historical assistants busy, studied critically the Greek and other sources, dictated and worked 8 to 10 hours a day, and published one volume a year regularly, till he died, May 23, 1886. Ranke married an Irish lady in 1843, and was ennobled in 1865.

Rankin, Jeremiah Eames, an American clergyman and writer; born in Thornton, N. H., Jan. 2, 1828; was graduated at Middlebury College, Vt., in 1848; became president of Howard University in 1889. He wrote several hymns, including "For God and Home and Native Land."

Ranney, William, an American artist; born in Middletown, Conn., May 9, 1813; learned drawing in Brooklyn, N. Y. At the outbreak of the war between Texas and Mexico he enlisted with the Texans. He died in West Hoboken, N. J., Nov. 18, 1857.

Ransom, Thomas Edward Greenfield, an American military officer; born in Norwich, Vt., Nov. 29, 1834. Before the Civil War he was an engineer in Illinois; became a lieutenant-colonel of volunteers in July, 1861; was promoted Brigadier-General in January, 1863; joined Sherman's army and took command of a division just before the capture of Atlanta, Sept. 2, 1864. He died in Rome, Ga., Oct. 29, 1864.

Ranunculus, buttercup, crowfoot; the typical genus of the order Ranunculaceæ. Known species about 160, from temperate regions. Many have much divided leaves.

Rape, in law, carnal knowledge of a woman by force against her will.

Rape, a plant of the cabbage tribe, cultivated for its seeds, from which oil is extracted. The oil cake made from rape seed is also used as food for sheep and cattle, and as a fertilizer.

Raphael, Raffaello Sanzio, or **Santi d'Urbino,** the greatest of modern painters; born in Urbino, Italy, March 28, 1483. He received his earliest instructions from his father, Giovanni Santi, after whose death, in 1494, he became the pupil of Perugino. In 1504 he visited Florence, and lived there till 1508, when he was called to Rome by Pope Julius II., and employed to paint the chambers of the Vatican. Raphael spent the rest

RANUNCULUS.

of his short life at Rome. In the numerous works, frescoes, and oil paintings of this unrivaled master, three styles are distinctly recognizable. The first is the "Peruginesque," the second "Florentine," and the third style "Roman," and is peculiarly Raphael's own — that which constitutes him the greatest of painters. Its supreme excellence is the equable development of all the essential qualities of art, composition, expression, design, coloring. Among Raphael's oil paintings are the "St. Cecilia," at Bologna; the famous "Madonna di San Sisto," now in the Dresden gallery; the "Spasimo di Sicilia," now at Madrid; and the "Transfiguration," his last work. It is now in the Vatican.

His drawings are very numerous, and are to be found in most of the public and private museums of America and Europe. Raphael, who had occupied himself with architecture as well as painting, was charged, on the death of his friend Bramante, in 1514, with the direction of the building of St. Peter's. Raphael died in Rome from the effects of a cold, and after an illness of a fortnight, on his 37th birthday, April 6, 1520.

Rapier, a light, highly-tempered, edgeless, and finely-pointed weapon of the sword kind used for thrusting. It is about three feet in length.

Rapp, George, a German-American socialist, founder of the sect of Economites; born in Wurtemberg, in 1770. After an attempt to restore the Church of New Testament days in Germany, he emigrated with his followers to Western Pennsylvania in 1803. There he established a settlement which he named Harmony. In 1815 the community removed to Indiana, and founded New Harmony; but this was sold in 1824 to Robert Owen, and Rapp and his followers returned to Pennsylvania, where they built Economy. As the years passed the community became wealthy. Its numbers have not increased, and in 1890 did not exceed 70. He died in Economy, Pa., Aug. 17, 1847.

Rapp, Jean, Count, a French military officer; born in Colmar, Haut-Rhin, France, April 27, 1772. He was intended for the Church, but his taste for a military life led him to enroll himself (1788) in the French army. He became aide-de-camp to Napoleon. Captured by the Russians at Danzig, he was sent as prisoner to Russia, and he did not return to France till July, 1814, where he was well received by Louis XVIII.; but in 1815 he went over to his old master, and was appointed Commander-in-Chief of the army of the Rhine. After Waterloo, Rapp again submitted to Louis. He died in Paris, Nov. 8, 1821.

Rappahannock, a river of Virginia, rising in the Blue Ridge of the Alleghany Mountains, receiving the Rapidan, and flowing about 125 miles S. E. to Chesapeake Bay. It is tidal and navigable to Fredericksburg. The Rappahannock and the Rapidan were the scenes of some of the most sanguinary battles of the Civil War, at Fredericksburg, Chancellorsville, and the Wilderness.

Rarefaction, in physics, the act of rendering more rare, i. e., less dense. Used specially of the diminution in the density of the air in the receiver of an air pump, or at great altitudes.

Rarey, John S., an American horse tamer; born in Franklin co., O., in 1828. At an early age he evinced natural ability in the management of horses. In 1856 he went to Texas, and on his return to Ohio he began to give public exhibitions of his skill, subduing the most vicious and wildest

RASPBERRY.

horses and making them obedient to his will. About 1861 he visited Europe. He died in Cleveland, O., Oct. 4, 1866.

Raritan, a river of New Jersey, formed by two branches which unitedly flow S. E., and fall into Raritan Bay near Perth Amboy. It is navigable as far as New Brunswick.

Rashi, from the initials of Rabbi Shelomo Izaaki, the greatest Jewish commentator and exegete; born in Troyes, France, about 1040. His chief work is his "Commentary" on the whole of the Old Testament. This "Commentary" was the first book ever printed in Hebrew. He was the author of numerous other works. He died July 13, 1105.

Raskolniki, the collective name given to the adherents of the dissenting sects in Russia, which have originated by secession from the State Church. The great majority of these sects date originally from the middle of the 17th century, when the liturgical books, etc., were revised under the patriarch Nikon. The Raskolniks clung to the old texts. Their numbers are variously estimated at from 3,000,000 to 11,000,000.

Rasp, a coarse file having, instead of chisel-cut teeth, its surface dotted with separate protruding teeth, formed by the indentations of a pointed punch.

Raspail, Francois Vincent, a French chemist; born in Carpentras, France, Jan. 29, 1794. He is by some considered the creator of organic chemistry. He died Jan. 8, 1878.

Raspberry, a shrubby plant with many suckers. Found in America and in the N. of Europe and Asia. The species in gardens is the wild plant, greatly improved by cultivation. The fruit resembles the strawberry in not becoming acid in the stomach. There are red and yellow varieties.

Rasse, a carnivorous quadruped, closely allied to the civet, spread over a great extent of Asia. Its perfume, which is secreted in a double pouch, is much valued by the Javanese. For its sake the animal is often kept in captivity.

BLACK RATS.

Rassieur, Leo, an American lawyer; born in Wadern, Prussia, April 19, 1844; came to the United States in early childhood. At the outbreak of the Civil War he volunteered as a private in the Union army, rising to the rank of major in 1865. He was admitted to the St. Louis bar in 1867; was elected judge of the Probate Court on Jan. 1, 1899. He was elected commander-in-chief of the Grand Army of the Republic, Aug. 20, 1900.

Rat, in zoölogy, a name popularly applied to the larger murines, but more strictly applicable to two species, the black rat and the brown, or Norway rat. Figuratively: (1) One who deserts his party (especially in politics), as rats are said to forsake a falling house or a doomed ship. (2) A workman who takes work for less than the regular wages current in the trade.

Rata, a New Zealand tree related to various species of ironwood. The tree begins life as a climber, attached to other forest trees, and attains a height of 150 feet; but when it has killed the supporting stem the rata is able to sustain its own weight and to grow on as an independent tree, attaining ultimately a height of nearly 200 feet.

Ratany, a shrubby plant found in Peru and Bolivia, having an excessively astringent root. It has silver-grey foliage and pretty red starlike flowers.

Ratel, a carnivorous quadruped of the badger family, found chiefly in South and East Africa, and in India. It is said to live principally on honey. The Indian ratel, however, eats also rats, birds, frogs, white ants, and various insects; and in the N. of India, where it is accused of digging out dead bodies, it is popularly known as the grave-digger.

Ratification, in law, the confirmation, sanction or approval given by a person who has arrived at his majority to acts done by him during his minority. It also means any act, public or private, which confirms or establishes a proposed transaction, incomplete until ratified.

Ratio, in mathematics: The measure of the relation which one quantity bears to another of the same kind.

Rationalism, as a "system of belief regulated by reason," might be expected to mean the opposite of irrationality, ignorance, and perverse prejudice. But in ordinary usage, general as well as theological, the use of the word is substantially different. It is generally employed as a term of re-

proach for those who, without utterly denying or attempting to overthrow the foundations of religion, make such concessions as tend to subvert the faith. They rely, more or less exclusively and blameworthily, on mere human reason instead of simply, frankly, and fully accepting the dicta of the divine word. An atheist would not be spoken of as a rationalist, nor would an irreligious, blaspheming freethinker.

Rat Snake, a powerful snake, attaining a length of seven feet and upward. Common in India and Ceylon. It frequently enters houses in search of mice, rats, and young fowls. It is fierce, and always ready to bite when annoyed.

Rattan, the commercial name for the stem of various species of the genus Calamus. They abound in Southern Asia in moist situations, and are used for making splints for chair seats and backs, hanks for sails, etc. The larger species grow to a size of three inches diameter, and to a height of 100 feet.

RATTLESNAKE.

Rattlesnake, the English name for any species of the American genus Crotalus, the tail of which is furnished with a rattle. Garman enumerates 12 species and 13 varieties. The poison of the rattlesnake is usually fatal to man, though fortunately they are sluggish, and never attempt to strike unless they are molested. They are widely distributed on the American continent; but advancing civilization is rapidly thinning their numbers.

Rattlesnake Root, an American plant used to cure the bite of the rattlesnake.

Rauhes Haus ("the Rough House"), the name of an institution founded at Horn, near Hamburg, in connection with the German Home Mission. It is partly a refuge for neglected children; partly a boarding school for the moral and intellectual education of children of the higher classes; and, a training school for those who wish to become teachers or officials in houses of correction. It was opened Nov. 1, 1831. By the addition of new houses the whole has been very much enlarged. The children live in families of 12. In connection with the Rauhes Haus there was founded in 1845 a kind of conventual institute for the education of young men as superintendents of similar institutions.

Raum, Green Berry, an American lawyer; born in Golconda, Ill., Dec. 3, 1829; studied law, and was admitted to the bar (1853). Three years later he took his family to Kansas. When the war broke out he enlisted, and was appointed major in the 56th Illinois regiment, and when he finally resigned his commission he had risen from major to Brigadier-General. In 1866 he was elected to Congress; was Commissioner of Internal Revenue in 1876–1883; United States Commissioner of Pensions in 1889–1893.

Raumer, Friedrich Ludwig Georg von, a German historian; born in Worlitz, near Dessau, Anhalt, May 14, 1781. He studied law at Halle and Gottingen, and entered the Prussian state service in 1801. In the years 1830–1843 he made extensive journeys, coming as far as the United States; the observations made during these trips were written in several books dealing with the United States, etc. He died in Berlin, Prussia, June 14, 1873.

Raumer, Karl Georg von, a German geologist and geographer, a brother of the preceding; born in Worlitz, Germany, April 9, 1783; studied at Gottingen and Halle, and at the Mining Academy at Freiberg; was appointed Professor of Mineralogy at Breslau, in 1811; in 1827, appointed Professor of Mineralogy and Natural History at Erlangen, where he died June 2, 1865.

Raven, a large bird of the crow family. The raven has played an im-

portant part in mythology and folk-lore. It is the first bird mentioned by name in the Old Testament; by the ministry of ravens Elijah was fed, and they were to be the ministers of vengeance on unruly children. The raven was the bird of Odin, and in classic mythology was of ill-omen, a character often attributed to it by the early English dramatists. Marlowe calls it the "sad presageful raven," and Shakespeare repeatedly refers to the belief that its appearance foreboded misfortune. This belief, which is widespread, probably arose from the preternaturally grave manner of the bird, its sable plumage, and the readiness with which it learns to imitate human speech.

RAVEN: CORVUS CORAX.

Ravenala, or **Ravinala,** a fine banana-like tree with edible seeds, from Madagascar, where the French call it the traveler's tree, perhaps because water is found in the cup-like sheaths of the leaf-stalks.

Ravenscroft, Thomas, an English composer; born in 1592. He was trained in St. Paul's choir, London, and received the degree of bachelor of music from Cambridge. In 1621 he published his "Whole Book of Psalms," containing a tune for each of the 150 psalms, harmonized in four parts by all the great musicians of the period. He died in 1640.

Ravogli, Augustus, an American surgeon; born in Rome, Italy, Feb. 7, 1851; was graduated at the Medical Department of the University of Rome, Italy, in 1873, and served as surgeon in the military hospital of the Italian army for several years. In 1880 he came to the United States and settled in Cincinnati, O.; was afterward made Professor of Dermatology and Syphilography at the Medical Department of the University of Cincinnati.

Raw, Charles, an American archæologist; born in Vervien, Belgium, in 1826; was educated in Germany, and settled in the United States in 1848. He was made curator of the Department of Antiquities in the United States Museum in Washington, D. C., in 1875. About this time he began to devote himself to the study of American archæology, in which he became an eminent authority. He died in Philadelphia, Pa., July 25, 1887.

Rawle, William (Brooke), an American lawyer; born in Philadelphia, Pa., Aug. 29, 1843; adopted for his surname Brooke-Rawle; was graduated at the University of Pennsylvania in 1863, and then joined the army as lieutenant-colonel. After the war he studied law and was admitted to the bar in 1867.

Rawle, William Henry, an American lawyer; born in Philadelphia, Pa., Aug. 31, 1823; was graduated at the University of Pennsylvania in 1841; was admitted to the bar in 1844 and attained eminence in practice. On the first call for volunteers in 1861 he joined the artillery in the Union army, and when a similar call was issued in 1863 he served as quartermaster. He was vice-provost of the Law Academy in 1865–1873, and vice-chancellor of the Law Association from 1880 till his death in Philadelphia, April 19, 1899.

Rawlins, John Aaron, an American military officer; born in Galena, Ill., Feb. 13, 1831. Before the Civil War he was a lawyer; adjutant-general of General Grant in September, 1861, and served as such in the campaigns of 1862 and 1863; in March, 1865, was appointed chief of General Grant's staff, with the rank of Brigadier-General in the U. S. A. He became Secretary of War in March, 1869. He died in Washington, D. C., Sept. 9, 1869.

Rawlins, Joseph Lafayette, an American legislator; born in Salt Lake co., Utah, March 28, 1850; was educated at the University of Indiana; was a Professor at the University of Deseret in Salt Lake City in 1873–1875; in the latter year was admitted to the bar, and practised till 1892, when he was elected a delegate to Congress. He was elected to the United States Senate in 1897.

Rawlinson, George, an English Orientalist; born in Chadlington, England, Nov. 23, 1812; educated at Cambridge; was elected Camden Professor of Ancient History in 1861, and made a canon of Canterbury in 1872. He died at Canterbury, England, October 6, 1902.

Rawlinson, Sir Henry Creswicke, an English Orientalist and diplomatist; born in Chadlington, England, April 11, 1810. In 1833 he went to Persia. During the six years he spent there he began to study the cuneiform inscriptions, and made a translation of Darius' famous Behistun inscription. After he left Persia he held command of Kandahar, 1840–1842; was appointed political agent at Bagdad in 1844, and consul-general there in 1851. Five years later he returned home to England. In 1858 he went back to Persia as British minister, but remained at Teheran only one year. Died in London, March 5, 1895.

Rawson, Edward Kirk, an American educator; born in Albany, N. Y., Feb. 21, 1846; was graduated at Yale University in 1868 and at the Andover Theological Seminary in 1872; was ordained in the Congregational Church and served as a chaplain in the United States navy in 1871–1890; was placed in charge of the Department of Ethics and English Studies at the United States Naval Academy in 1888 and was made superintendent of "Naval War Records," March 31, 1897. His publications include "Twenty Famous Naval Battles," etc.

Ray, of a composite flower, the outer or circumferential whorl of florets, as distinguished from those of the disk. In ichthyology, one of the radiating, bony rods serving to support the fins. In optics, a line of light proceeding from a radiant point, or a point of reflection.

Ray, a family of fishes, including the skate and allied forms. They may be divided into two groups: Rays proper, with a short snout, and skates (attaining a much larger size), with a long, pointed snout.

Ray, or **Wray, John,** an English naturalist; born in Black Notley, Essex, England, Nov. 29, 1628. Ray's zoölogical works are considered by Cuvier as the foundation of modern zoölogy. He died in Black Notley, Jan. 17, 1705.

Ray, W. George, an American lawyer; born in Otselic, N. Y., Feb. 3, 1844; was reared on a farm and received his education at Norwich Academy. At the beginning of the Civil War he entered the Union army as a private in the 19th New York Volunteers. After the war he studied law and was admitted to the bar in November, 1867; was elected to Congress in 1883. He declined the appointment of justice of the Supreme Court of New York State in 1899.

Rayleigh, John Strutt, 3d Baron, an English scientist; born in Essex, England, Nov. 12, 1842; was graduated at Cambridge, in 1865. Columbia College, New York, bestowed on him the Barnard medal for "meritorious service to science" since he shares with Ramsey the merit of discovering the element argon. He wrote many valuable scientific papers.

Raymond, Bradford Paul, an American clergyman; born in Stamford, Conn., April 22, 1846; was educated at Hamline University, Minn., and Lawrence University, Wis., and was graduated at the Theological School of Boston University and ordained in the Methodist Episcopal Church in 1874. He was president of Lawrence University from 1883 to 1889, resigning to become president of Wesleyan University, Middletown, Conn.

Raymond, Jerome Hall, an American educator; born in Clinton, Ia., March 10, 1869; was graduated at the Northwestern University in 1892; served as president and Professor of Economics and Sociology at the West Virginia University in 1897–1901; and in the latter year became associate professor of sociology at the University of Chicago.

Raymond, Henry Jarvis, an American journalist; born in Lima, N. Y., Jan. 24, 1820; was graduated at the University of Vermont in 1840; in 1841 he became managing editor of the New York "Tribune." In 1849 he was elected to the State Assembly; was reëlected and made speaker, but relinquished his position on the "Courier," and traveled in Europe on account of ill health. On his return to New York, in 1851, he established the New York "Times"; was chosen lieutenant-governor of New York; was again elected to the State Legislature, and, in 1864, was chosen as representative from New York to the 39th Congress. He died in New York, June 18, 1869.

Raymond, John T., right name John O'Brien, an American actor; born in Buffalo, N. Y., April 5, 1836. He was educated for a mercantile life, but the ways of business did not suit him. In 1867 he went to England. He died in Evansville, Ind., April 10, 1887.

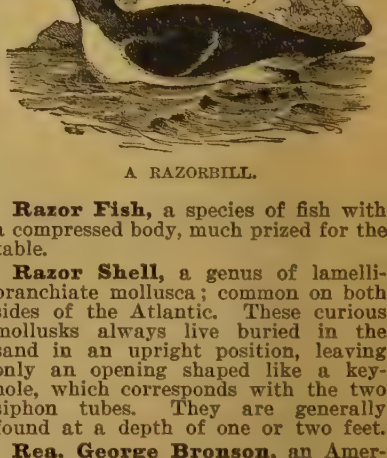
Raymond, Rossiter Worthington, an American metallurgist; born in Cincinnati, O., April 27, 1840; was graduated at the Brooklyn Polytechnic Institute in 1858. He practised in New York city as a consulting engineer in 1864–1868; lectured on economic geology at Lafayette College in 1870–1872. He was United States commissioner to the Vienna Exposition in 1873; New York State commissioner of electric subways for Brooklyn in 1885.

Raymond, William Galt, an American civil engineer; born in Princeton, Ia., March 2, 1859; studied at the Kansas State University and was graduated at Washington University in 1884; was instructor of civil engineering at the California State University in 1884–1890; and accepted the chair of geodesy, road engineering, and topographical drawing at the Rensselaer Polytechnic Institute in 1892.

Razor, a keen-edged steel instrument for shaving off the beard or hair. Excellent razors are manufactured in the United States.

Razorback, one of the largest species of the whale tribe, the great rorqual. Also a name given to a kind of hog, especially in the S. part of the United States.

Razorbill, an aquatic bird, the common auk, the sole species of the genus, the great auk, being extinct.



A RAZORBILL.

Razor Fish, a species of fish with a compressed body, much prized for the table.

Razor Shell, a genus of lamellibranchiate mollusca; common on both sides of the Atlantic. These curious mollusks always live buried in the sand in an upright position, leaving only an opening shaped like a keyhole, which corresponds with the two siphon tubes. They are generally found at a depth of one or two feet.

Rea, George Bronson, an American electrical engineer; born in Brooklyn, N. Y., Aug. 28, 1869; went to Cuba, where he practised his profession till the beginning of the revolution; accompanied the insurgent forces of Gomez and Maceo as special correspondent of the New York "Herald." He was present at the bombardment of San Juan, Porto Rico, and in the operations before Santiago as correspondent for the New York "World." In the early part of the Porto Rico campaign he traveled through the island as an agent in the secret service of the United States government, and acquired information of large value to the American military authorities.

Read, Hollis, an American clergyman and author; born in Newfane, Vt., Aug. 26, 1802; was graduated at Williams College in 1826, and received his theological training at Princeton

Theological Seminary; was ordained in the Presbyterian Church in 1829, and went to Bombay, India, in 1830, where he remained five years. Returning to the United States he held various pastorates and engaged in other religious work. His publications include "Commerce and Christianity"; India and Its People, Ancient and Modern"; etc. He died in Somerville, N. J., April 7, 1887.

Read, John Elliot, an American author; born in South Amherst, Mass., Jan. 4, 1845. He has written a valuable work on the principal earlier Arctic explorations.

Read, John Meredith, an American jurist; born in Philadelphia, Pa., July 21, 1797; was graduated at the University of Pennsylvania in 1812; admitted to the bar in 1818. He held a seat in the Pennsylvania Legislature in 1822–1823; was United States attorney for the Eastern District of Pennsylvania in 1837–1844; and served as chief-justice and attorney-general of Pennsylvania, and solicitor-general of the United States in 1860–1874. He affiliated with the Republican party when it was formed and in the presidential campaign of 1856 made an address on the "Power of Congress over Slavery in the Territories," which had much influence throughout the country. In 1858, on the first victory of the Republican party in Pennsylvania, he was elected Judge of the Supreme Court by a majority of 30,000. In 1860 he was mentioned as a candidate for the presidential nomination with Abraham Lincoln for Vice-President. He died in Philadelpha, Pa., Nov. 29, 1874.

Read, John Meredith, an American diplomatist; born in Philadelphia, Pa., Feb. 27, 1837; was graduated at Brown University and went through the legal course at the Albany Law School; was also a student in a military school. When the Civil War broke out he enlisted and while in service early attained the rank of Brigadier-General of volunteers. In 1868 he was appointed United States consul-general at Paris. He was United States minister in Greece in 1873–1880. He died in Paris, France, Dec. 7, 1896.

Read, Nathan, an American inventor; claimed to have been the first to use steam engines for propelling boats and carriages; born in Worcester co., Mass., in 1759. He entered Harvard College in 1777; was graduated in 1781; studied medicine; and started the Salem iron factory in 1796. In 1807, he removed to Belfast, Me., and took out a patent for an improved steam engine boiler in 1791. He converted the condensing engine of Watt into a complete working, portable, high-pressure engine, 12 years before the high-pressure engine was known. In 1790 he petitioned Congress for a patent for land carriages to be driven by steam. It created so much amusement that he withdrew it. He built, in 1789, a small steamboat, substantially identical with Fulton's of 1807. It is alleged that his combinations amounted to the inland steamers now in use. Died in Belfast, Me., in 1849.

Read, Opie, an American journalist; born in Nashville, Tenn., Dec. 22, 1852. He established and edited for many years the "Arkansaw Traveler." His studies of Arkansas life have been widely read.

Read, Thomas Buchanan, an American portrait painter and poet; born in Chester co., Pa., March 12, 1822; died in New York, May 11,1872.

Reade, Charles, an English novelist; born in Ipsden House, Oxfordshire, England, June 8, 1814. He was educated at Oxford. In 1843 he was called to the bar, and it soon became obvious that his chosen career was that of literature. The books by which he first became known were his "Peg Woffington" and "Christie Johnstone." He died in London, England, April 11, 1884.

Reade, John, an Irish-Canadian clergyman and journalist; born in Ballyshannon, Ireland, Nov. 13, 1837. He went to Canada in 1856, where he engaged in teaching, law, preaching, and journalism.

Reader, Francis Smith, an American journalist; born in Coal Center, Pa., Nov. 17, 1842; served with the Union army throughout the Civil War; was taken prisoner, June 20, 1864, while on scout duty, but escaped with three others while on the way to Andersonville. Later he became editor of the "Beaver Valley News." His publications include:

"Life of Moody and Sankey"; "History of the 5th West Virginia Cavalry"; etc.

Reagan, John Henninger, an American jurist; born in Sevier co., Tenn., Oct. 8, 1818. At the age of 21 he settled in Texas; in 1856 was elected judge of the district court for six years, but resigned the office to go to Congress from the 1st District in 1867; during the Civil War was Postmaster-General of the Confederate States, and Acting Secretary of the Confederate Treasury, was a member of the Constitutional Convention of his State in 1875, and member of Congress in 1875–1887; was United States Senator in 1887–1891; and afterward chairman of the Texas State Railroad Commission.

Reagent, in chemistry, any substance employed to bring about a chemical reaction or change in another element, or compound, with the view generally of either detecting its presence or effecting its separation from other substances.

Real, in law, pertaining to things fixed, permanent, or immovable. Thus real estate is landed property, including all estates and interest in lands which are held for life or for some greater estate, and whether such lands be of freehold or copyhold tenure. So a real action is an action brought for the specific recovery of lands, tenements, and hereditaments.

Realf, Richard, an English-American poet; born in Framfield, Sussex, England, June 14, 1834. In 1854 he came to the United States, enlisted in the army in 1862, and wrote some of his best lyrics in the field. His most admired poems are "My Slain," "An Old Man's Idyl," and "Indirection." Died in Oakland, Cal., Oct. 28, 1878.

Realism, in philosophy, a doctrine diametrically opposed to Nominalism, as involving the belief that genus and species are real things, existing independently of our conceptions and their expressions, and that these are alike actually the object of our thoughts when we make use of the terms. Again, as opposed to Idealism, the word implies an intuitive cognition of the external object, instead of merely a mediate and representative knowledge of it.

In art and literature the word realism or naturalism is employed to describe a method of representation without idealization, which in our day in France has been raised to a system and claims a monopoly of truth in its artistic treatment of the facts of nature and life.

Ream, a quantity of paper of any size containing 20 quires or 480 sheets. A common practice is now to count 500 sheets to the ream. Hence used for a large quantity of paper.

Reaping Machine, a machine for reaping or cutting down grain in the field. There are numerous varieties. In 1822 a self-sharpening mowing machine was patented in the United States. Between 1852 and 1874 nearly 3,000 patents for reaping machines were taken out for the United States. There are two kinds of self-delivery machines, the former laying the cut grain in swaths and the latter forming it into sheaves; this form being more frequently used.

Rearick, Peter Anton, an American naval officer; born in Maryland, Nov. 12, 1838; entered the navy in 1860; served through the Civil War on various vessels; was promoted chief engineer in 1874, and in that capacity served at various posts till February, 1900, when he was retired with the rank of rear-admiral under the provisions of the Naval Personnel Law. He died in Washington, D. C., Feb. 9, 1901.

Reason, in logic, the premise or premises of an argument, and especially the minor premise. In metaphysics, the power of thinking consecutively; the power of passing in mental review all the facts and principles bearing on a subject, and, after a careful consideration of their bearings, drawing conclusions in many cases conformable with truth.

Reaumur, Rene Antoine Ferchault de, a French physicist and naturalist; born in La Rochelle, France, Feb. 28, 1683. He went to Paris in 1703; in 1708 was chosen a member of the Academy of Sciences; and for nearly 50 years continued to be one of its most active members. As a natural philosopher he is celebrated for the invention of an improved thermometer, which he made known in

731, but his greatest work is "Natural History of Insects" (6 vols.). Died in Maine, France, Oct. 18, 1757.

Reaumur's Scale, a scale for a thermometer, in which the two fixed points being as in the Centigrade, the division is into 80 instead of 100 parts. It is still occasionally used.

Reavis, Logan Uriah, an American journalist; born in Sangamon Bottom, Ill., March 26, 1831. In 1866 he removed to St. Louis, to which city he strenuously advocated the removal of the National capital. To promote his object he lectured extensively in all parts of the country. He went to England in 1879 to inaugurate a movement for the promotion of immigration to Missouri. His publications include: "St. Louis the Future Great City of the World"; "A Representative Life of Horace Greeley"; "Life of General William S. Harney"; etc. Died in St. Louis, Mo., April 25, 1889.

Rebekah, Daughters of, a degree in the ritual of Odd Fellowship, to which women are admitted.

Rebellion, the taking up of arms, whether by natural subjects or others, residing in the country, against a settled government. By international law rebellion is considered a crime, and all persons voluntarily abetting it are criminals whether subjects or foreigners.

Rebisso, Louis T., an American sculptor; born in Italy, in 1837. Having taken an active part in Mazzini's attempt to establish an Italian republic, at the age of 20, he fled from Italy and made his way to Boston, Mass. Subsequently he went to Cincinnati, O., where his fame as an artist developed. His leading works are the equestrian statues of Gen. J. B. McPherson in Washington, D. C.; of Gen. U. S. Grant in Lincoln Park, Chicago, and of Gen. W. H. Harrison in Cincinnati. He died in Norwood, a suburb of Cincinnati, O., May 3, 1899.

Rebus ("by things"), a word, name or phrase represented by the figure of an object which resembles in sound the words, or syllables of the words, indicated; an enigmatical representation of words by the use of figures or pictures; thus, a "bolt" and "tun" represent "Bolton."

Recaption, in law, recaption or reprisal is another species of remedy by the mere act of the party injured. This happens when any one has deprived another of his property in goods or chattels personal, or wrongfully detains one's wife, child, or servant; in which case the owner of the goods, and the husband, parent, or master, may lawfully claim and retake them, wherever he happens to find them; so it be not in a riotous manner, or attended with a breach of the peace.

Receipt, a written document, declaring that certain goods or a sum of money have been received. When made out in full, a receipt should contain (1) the date when the merchandise or money was received, (2) the name of the person or firm from whom received, (3) the name of the person who received it, and (4) for what the money is paid or deposited. A receipt may be in full or in part payment of an account, and operates accordingly. A receipt, though evidence of payment, is not absolute proof, and this evidence may be rebutted by proving that it was given under misapprehension.

Receiver, a person specially appointed by a court of justice to receive the rents and profits of land, or the produce of other property, which is in dispute in a cause in that court. The name is also given to a person appointed in suits concerning the estates of infants, or against executors, or between partners in business, or insolvents, for the purpose of winding up the concern.

Receiver of Stolen Goods, one who takes stolen goods from a thief, knowing them to be stolen, and incurs the guilt of partaking in the crime. In the United States the penalty is fixed by statutes in the several States.

Rechabite, a member of a section of the Kenites, called in Hebrew rechabim, from Rechab, the father of Jonadab, who enjoined his descendants to abstain from wine, from building houses, sowing seed, and planting vineyards, and commanded them to dwell in tents. Hence, one who abstains from alcoholic beverages; a teetotaler. Also a member of the Independent Order of Rechabites, a friendly society founded on temperance principles. The order has been

introduced into the United States, Canada, and Australia. Their lodges are called "tents" in allusion to Jer. xxxv: 7. The total number of members in the United States Jan. 1, 1901, was 2,500; in the world, 264,000.

Reciprocal, in grammar, reflexive. Applied to verbs which have as an object a pronoun standing for the subject; as, "Bethink yourself." It is also applied to pronouns of this class. As a noun, that which is reciprocal to another thing. Specifically, in mathematics, the quotient resulting from the division of unity by the quantity.

Reciprocity, the quality or state of being reciprocal; specifically, reciprocal obligation or right; equal rights to be mutually granted and enjoyed, as, in political economy, the securing in commercial treaties between two or more nations mutual advantages to the same extent, e. g., the admission, mutually, of certain goods, supposed to be practically equivalent to each other, duty free, or at equal duties on importation.

Reciprocity Treaty, a treaty made between two countries for the purpose of regulating trade between them. The United States has entered into a number of such compacts, and the tariff bill of 1897 provided for the appointment of a special commissioner to negotiate such treaties. John A. Kasson was the first commissioner.

Reclus, Jean Jacques Elisee, a French geographer; born in Sainte-Foix la Grande, France, March 15, 1830. In consequence of his extreme democratic views he left France after the coup d'etat of 1851, and spent the next seven years in England, Ireland, North and Central America, and Colombia. He returned to Paris in 1858, and published an introduction to the "Dictionary of the Communes of France" (1864). While living in exile in Switzerland he began his masterpiece, "New General Geography." Reclus has also written another great work, a physical geography entitled "The Earth."

Recognizance, or **Recognisance,** in law, an obligation of record, which a man enters into before some court of record or magistrate duly authorized, with condition to do some particular act; as, to keep the peace, to pay a debt, or the like.

Recollet, or **Recollect, Friars** or **Nuns,** the name given to a reformed body of Franciscans. The society was founded in Spain, and thence spread throughout Europe, so that in France before the Revolution, they had 168 houses. The order still exists at a few places.

Reconcentrado (Spanish), one of a class of Cubans during the final Cuban rebellion against Spain. Governor-General Weyler issued a decree that all of the peasant class not actively engaged in the insurrection but at their homes or ranches, should be "reconcentrafed" in or near certain towns, disobedience to this decree incurring the penalty of death. Accordingly. these people, non-combatants and mostly old men beyond the ability of army service, feeble old women children, and babies, were forced to leave their homes and to gather in herds in and near these towns, where they were without food and shelter "reconcentrated," to starve and to suffer from exposure to the weather and lack of all comfort. These helpless victims were popularly called "reconcentrados." General Weyler's purpose in this "measure of war" was to desolate the island in certain parts so that the "insurgents" could not get aid and food. With this end in view, the abandoned homes were destroyed, and whatever remained of value to the Spaniards was confiscated. Whole districts in the most productive part of the island were thus laid waste. Sugar mills were burned and other industrial property was destroyed. Nearly 400,000 "reconcentrados" were forced to go within the Spanish lines, where no means of subsistence were provided for them. More than 200,000 died of starvation and disease, an appalling record in modern civilization.

The United States was shocked by this atrocity, and at this time could give but little aid to the sufferers, their undertakings, including Christian Herald work, being barred out or limited by Spanish authority. Later American work of "rescue in Cuba" was largely effective for this most unfortunate class. When the decree,

nder General Blanco, was issued to ermit the reconcentrados to return their homes, there was but desola-on where their homes had been. It as at this time that the American lief work, by readers of the "Chris-an Herald," Red Cross ministration, nd other help availed this helpless ass, but not to the full extent of eir capacities till the American army nd navy had extinguished Spanish le in the "Pearl of the Antilles."

Reconstruction, in United States story, a making-over of the political bric of the States that composed the outhern Confederacy. At the close the Civil War, these States were actically without governments, those hich they had established after their ithdrawal from the Union having en overthrown. They had been ared insurgents and therefore their lation to the United States govern-ent was that of a conquered terri-ry.

When Congress assembled, in De-mber, 1865, Republican opposition as manifest in an enactment that no ate should be represented in either ouse till Congress had declared its ght to representation. A bill was ssed proposing the Fourteenth nendment to the National Constitu-on, and declaring the right of rep-sentation to any States ratifying. he Civil-Rights Bill followed, and e bill enlarging the provisions of e freedman's bureau, were passed er the President's veto.

Congress then passed a series of ws, some of them over the Presi-nt's veto. Among these were the enure of Office Act, establishment of niversal suffrage in the territories, mission of Nebraska into the Union, d making General Grant irremov-le as head of the army. Meantime, t one State, Tennessee, had been mitted, July 24, 1866, none of the hers adopted the Fourteenth Amend-ent. In view of the situation, Con-ess divided the South into five mili-ry districts. A military governor as appointed for each district, and was empowered to protect life and operty through local courts or mili-ry commissions. Each governor was supervise the election of delegates a constitutional convention to which l but certain disqualified classes were to be admitted, such delegates to be elected by those eligible to vote. It was provided that such constitutions should be ratified by a popular vote, and then placed before Congress; the next measure to be a ratification of the Fourteenth Amendment by the new Legislature so including the amend-ment in the State constitution, which act should entitle the State to repre-sentation in Congress. The bill with such provisions was passed over the President's veto, March 2, 1867. The provisions of the bill were carried out, and the constitutions which were adopted abolished slavery, renounced the right of secession, and agreed to pass no laws limiting the liberty of any class of citizens and repudiated the debts incurred during the Civil War. Governors and legislators were elected under these constitutions. Ar-kansas was admitted June 22, 1868; North Carolina, South Carolina, Geor-gia, Florida, Alabama, and Louisiana, June 28, 1868; Virginia, Jan. 26, 1870; Mississippi, Feb. 23, 1870; Texas, March 30, 1870. Congress did not complete the readmission of Geor-gia till July 15, 1870, that State hav-ing failed in its compliance with the general policy. The four States last named were compelled to ratify the Fifteenth Amendment also, before their admission, as a penalty for delay in complying with the plan of Congress. The Supreme Court of the United States in the case of Texas vs. White declared the action of Congress con-stitutional.

Recorder, the chief judicial officer of a city, exercising within it, in crim-inal matters, the jurisdiction of a court of record, whence his title is derived. The recorder of the city of New York is an important judicial officer, with power to try the highest crimes. Several distinguished men have held the office.

Recording and Registering Machines, devices that make a per-manent record of events, dates and numbers. A large number of contriv-ances have been invented for register-ing and recording in the shortest time and with the least possible work.

Recreative Religionists, an as-sociation formed in England in De-cember, 1866, for giving popular sci-entific lectures on Sunday evenings,

sacred music being performed at intervals. The Recreative Religionists have for some years figured in the registrar-general's returns of sects, having registered places of worship.

Rectangle, in geometry, a parallelogram or quadrilateral figure whose angles are all right angles. An equilateral rectangle is a square.

Rectify, to separate the lighter portions of any liquid, and render pure and homogeneous any alcohol, ether, or volatile oil, by repeated distillation.

Rector, in the Episcopal Church and also the Roman Catholic Church. A clergyman who has the cure of a parish. In the Roman Catholic Church, the head of a religious house; among the Jesuits, the head of a house that is a seminary or college, academy, or important public school.

Rectum, in anatomy, the lowest portion of the large intestine extending from the sigmoid flexure of the colon to the anus.

Red, a color resembling that of arterial blood; the color of that part of the solar spectrum which is farthest from violet; one of the three primary colors. Reds are derived from the three kingdoms of nature, carmine being derived from the cochineal insect, the lakes and madders from the vegetable world, and the others from the mineral world.

Redan, in fortifications, a work having two faces forming a salient angle in the direction from which an attack may be expected. It is open at the gorge. A double redan has a re-entering angle for mutual defense. The redan is the simplest field work, and is used for defending the avenues of approach to a village, bridge, or defile.

Red Bat, from the temperate parts of North America. Length about two inches; fur long and silky, generally light russet, tinged with yellow, darker and richer on the back.

Redbird, the popular name of several birds of the United States, as the summer redbird, and the Baltimore oriole or hang nest.

Red Brocket, a deer about 30 inches high, reddish-brown, with simple, unbranched antlers; females hornless. Habitat, the low, moist woods of South America.

Red Cedar, a species of juniper found in North America and the West Indies; the heartwood is of a bright red, smooth, and moderately soft, and is in much request for the outsides of lead pencils.

Red Coral, an important genus of sclerobasic corals. Red coral is highly valued for the manufacture of jewelry, and is obtained from the coasts of Sicily, Italy, and other parts of the Mediterranean.

Red Cross Society, an international organization for the protection and care of the sick and wounded in war and for the care of sufferers from other large calamities. The organization is the result of an international treaty entered into by most of the leading nations at a convention held at Geneva, Switzerland, in August, 1864. This treaty sustains the neutrality of Red Cross Societies in all countries and on all waters covered by the compact, and insures to it the protection of all conflicting forces in the time of war. The original treaty covered all suffering caused by war; but today the Red Cross cares for the victims of pestilence flood and fire as well as for the victims of war. The treaty provides that the hospital flag of every nation must be a red Greek cross on a white ground, and that every person, ambulance, and other parts of the service must be so designated. By the articles of the treaty, a sick or wounded soldier is a "neutral case." The land ambulances and the ambulance boats carrying the Red Cross flag move about wherever needed, all civilized nations deferring to their humane service. In the hospitals every soldier and sailor receives the best care and if cured is sent home as a non-combatant. The Red Cross treaty provides for the mitigation of the horrors of war. The nations that are parties to this treaty are: The United States Venezuela, Bolivia, Chile, Peru, Argentina, Great Britain, Germany France, Belgium, Russia, Austria Sweden, Norway, Turkey, Greece Spain, Italy, Servia, Persia, the Roman States, Switzerland, Japan, and other governments to the number of 40 or more.

National Red Cross.— This national body was incorporated under the

laws of the District of Columbia, October 1, 1881, and was reincorporated April 17, 1893, for the relief of suffering by war, pestilence, famine, flood, fires, and other calamities of sufficient magnitude to be deemed national in extent.

The American National Red Cross has been active in the directions indicated, and the New York Red Cross and other organizations with similar aims have done and are doing most creditable work in the relief of suffering. When the awful condition of the Cuban reconcentrados touched every heart that had a spark of human feeling, the readers of the "Christian Herald" were prompt and generous in contributing to relieve the unhappy victims of Spanish oppression. President McKinley appointed a "Central Cuban Relief Committee," consisting of ex-Mayor Charles A. Schieren, of Brooklyn, N. Y., Louis Klopsch, of the "Christian Herald," and Stephen Barton, vice-president of the National Red Cross, to administer funds donated for Cuban relief. The "Christian Herald" turned in $100,000 in cash donations, and considerable sums of money and large quantities of goods were receivel from all parts of the country. The Joint Traffic Association offered to transport supplies free of charge, and consignments of food, clothing and medicine were sent to Cuba by the regular steamers and vessels specially chartered.

The steamer "State of Texas," chartered by the Central Cuban Relief Committee, and loaded with supplies for Cuban sufferers, started from New York the day after war began, having been intrusted by the Committee to the care of the National Red Cross. After considerable delay at Key West and Tampa, pending war operations, the "State of Texas" proceeded to Santiago, where Dr. A. M. Lesser, chief surgeon of the New York Red Cross, and his staff of assistants, distinguished themselves by their work in the field hospitals. It was stated in 1903 that Miss Clara Barton proposed to effect a reorganization of the National Red Cross, of which she is President.

Red Cross, The Royal, a decoration instituted by Queen Victoria in 1883. It is conferred on any ladies, English or foreign, recommended by the Secretary of State for War, for special exertions in providing for the nursing, or for attending to sick and wounded soldiers and sailors. The decoration is a cross of crimson enamel gold-edged, attached to a dark-blue ribbon red-edged, one inch in width, tied in a bow and worn on the left shoulder.

Red Currant, a deciduous shrub much cultivated for its fruit, indigenous in the N. portions of America and Europe. The juice of the fruit is used for making jelly, and a fermented liquor called currant wine.

Redemption, in commerce, repurchase by the issuer of notes, bills, bonds, or other evidence of debt, by paying their value in money to the holders. In law, the liberation or freeing of an estate from a mortgage; the repurchase of the right to reënter upon an estate on performance of the terms or conditions on which it was conveyed; the right of redeeming and reëntering into possession. In theology, ransoming. The ransom of sinners from the curse of the law, i. e., from the penalties of the violated law of God, effected through "the blood of Christ," i. e., through His atoning sacrifice.

Red-eye, or **Rudd,** a fish belonging to the same genus as roach, chub, and minnow. It is common in lakes, slow rivers, and fens, in many parts of Europe and in England. It much resembles the roach, but is shorter and deeper. It is richly colored, the name rudd referring to the color of the fins, the name red-eye to that of its iris.

Redfield, Isaac Fletcher, an American jurist; born in Wethersfield, Vt., April 10, 1804; was graduated at Dartmouth College in 1825. In 1835 he was made judge of the Supreme Court of Vermont, and in 1852 became chief-justice, retiring from the bench in 1860. He was Professor of Jurisprudence at Dart-

mouth College in 1857–1861; removed to Boston in the latter year; and in 1867–1869 was special counsel for the United States in Europe, conducting numerous important legal matters in England and France. He was the author of "A Practical Treatise on the Law of Railways"; "The Law of Carriers and Bailments"; etc. Died in Charlestown, Mass., March 23, 1876.

Red Fish, a species of fish found on the Atlantic coast of North America, a large red fish caught in considerable numbers for food. A smaller species receives the same name, and is called also red perch, rose fish, etc.

Red Lead, an oxide of lead, produced by heating the protoxide in contact with air. It is much used as a pigment, and is commonly known as minium.

Red Men, Improved Order of, a social, fraternal, and benevolent secret organization founded on the customs and traditions of the aborigines of the American continent, and the oldest benevolent society in the United States of distinctively American origin and growth. The first authenticated Red Men's Society was organized in Philadelphia, Pa., early in 1772. The order is composed of subordinate bodies called tribes, officered by a sachem, senior sagamore, junior sagamore, prophet, chief of records, keeper of wampum, and minor subchiefs. In each State possessing necessary membership a Great Council is constituted, composed of representatives from the various tribes under its jurisdiction, and officered by similar chiefs to the subordinate tribes, with the prefixed title of Great. The Great Council of the United States is the supreme legislative body, and is composed of representatives from each Great Council. There were in 1901, 45 great councils; 3,135 tribes; and 260,459 members. The benefits disbursed in the last fiscal year aggregated $710,697, and since organization, $17,360,714.

Red Ochre, a name common to a variety of pigments, rather than designating an individual color, and comprehending Indian red, light red, Venetian red, scarlet ochre, Indian ochre, reddle, bole, and other oxides of iron. As a mineral it designates a soft earthy variety of hæmatite.

Redpath, James, an American journalist; born in Berwick, Scotland, Aug. 24, 1833. He became assistant editor of the "North American Review" in 1886. He published "The John Brown Invasion," "Life of John Brown," and "Talks About Ireland," etc. He died Feb. 10, 1891.

Red Pine, a species of pine also called Norway pine. Its wood is very resinous and durable, and is much used in house and shipbuilding. It produces turpentine, tar, pitch, resin and lampblack.,

Red River, the lowest W. branch of the Mississippi, rises near the E. border of New Mexico, flows E. through Texas, forming the entire S. boundary of Indian Territory, thence S. E. through Arkansas and Louisiana and enters the Mississippi below lat. 31° N. It is 1,600 miles long. It is navigable for seven months to Shreveport (350 miles).

Red River of the North, a navigable river of the United States and Canada, rises in Elbow Lake, Minn., near the sources of the Mississippi and flows S. and W. to Breckinridge, then N., forming the boundary between Minnesota and North Dakota and so into Manitoba and through a flat country to Lake Winnipeg. Its course is 665 miles (525 in the United States). The Red River Settlement was the origin of Manitoba.

Red Root, a genus of deciduous shrubs. The common red root of North America which abounds from Canada to Florida, is a shrub of two to four feet high, with beautiful thyrses of numerous small white flowers. It is sometimes called New Jersey tea, an infusion of its leaves being sometimes used as tea. A Mexican species has blue flowers, and a California kind is used for evergreen hedges.

Red Sea, an arm of the Indian Ocean, running N. N. W. from the Gulf of Aden, with which it communicates by the Strait of Bab-el-Mandeb 13½ miles across. Its length is about 1,200 miles, and its width in the central portion is between 100 and 200 miles; the greatest breadth being about 205 miles; it narrows toward the S. entrance, while in the N. it is divided by the peninsula of Sinai into two gulfs, the Gulf of Suez, 170 miles long

by 30 miles wide, and the Gulf of Akaba, 100 miles in length.

In ancient times the Red Sea was used as the means of communication by the Phœnicians and other maritime peoples, till the discovery of the route around the Cape of Good Hope diverted the traffic into another channel, only to be revived, however, on a much more extensive scale with the construction of the Suez Canal.

Red Snow, snow colored red. Aristotle hinted at its existence; Saussure in 1760 discovered it on the St. Bernard, and Captain Ross in 1819 brought specimens from the Arctic regions. He had found eight miles of cliffs, 600 feet high, colored by it, in many places to the depth of 12 feet, where the rock was reached. Captain Parry and other Arctic explorers have since met with it abundantly. All authorities agree that it arises from minute organisms, vegetable or animal. Much of it is colored by the red snow plant.

Redstart, a fly-catching warbler. Male black with patches of orange-red. Female, olive with yellow patches.

Red Sunsets. The autumn of 1883 and the succeeding few months were noteworthy for the occurrence of brilliant phenomena in the W. sky in every part of the globe, but especially in the Indian Ocean and the South Pacific. Shortly after sunset a vivid red glow suffused the entire W. sky, remaining for upward of an hour, when it would slowly fade away. In the latitudes of North America these red sunsets were of almost nightly occurrence for several months. In striving to account for these strange manifestations a number of solutions were offered, but the theory that met with greatest acceptance was that they emanated from volcanic dust and gaseous matter vomited by Krakatoa, in Sunda Straits. Calculations demonstrated the fact that the manifestations of the red glow coincided with the course which such vapors would take on being wafted away by the prevailing winds. But this theory found many opponents.

Red Top, a well-known species of bent-grass, highly valued in the United States for pasturage and hay for cattle.

Redway, Jaques Wardlaw, an American geographer; born in Nashville, Tenn., in May, 1849. He engaged in mining in California and Arizona; traveled in South America, Europe, and Asia, for the purpose of pursuing geographical investigations, and was author of several treatises on physical geography, etc., among them "Modern Facts and Ancient Fancies in Geography"; "Climate and the Gulf Stream"; "A Treatise on the Projection of Maps," etc.

Redwing, a North American passerine bird, of the family Icteridæ. Male, black with red spots, bordered with orange on the wings. The name is given in Europe to a species of thrush, closly allied to the common thrush.

Redwood, the name of various sorts of wood of a red color, as the wood of the redwood of Jamaica; of Andaman wood; of the redwood of the Bahamas; and of a coniferous tree of California, the redwood of the timber trade.

Redwood of California.—This tree is found only in California and in but a comparatively contracted area even there. The available redwood is now confined to about 318 miles of coast. The annual product in this region is about 320,000,000 feet, and it is estimated, at the present rate of consumption, that enough standing timber exists to last for 150 years.

The lumber is becoming more in demand for decorative purposes. Its color, a light salmon when first cut, afterward turns to a deep red. When thoroughly dried there is no shrinkage and it readily yields to the chisel of the carver. Piano cases made from the wood are said to give increased resonance to the instrument. Large quantities are consumed for interior finishing with gratifying effects. In addition to other fine qualities the wood takes on a beautiful polish and even the stumpage, till recently considered worthless, is found to possess valuable qualities. The roots and woody excrescences at the base of the tree give fine effects in wavy outlines, and when polished the material is much valued for decorative purposes.

In the Eel river redwood district, Humboldt county, there are 80,000 acres of timber lands, which will produce, at a low estimate, 75,000 feet to the acre. In size the trees range from

four to six feet in diameter; if below 18 inches they are left standing. Of the larger sizes from 8,000 to 12,000 feet are produced from each tree. A single tree grown in this valley has produced 80,000 feet of merchantable lumber.

Reebok, or **Rheebok,** an antelope of South Africa. Length about 5 feet, height at shoulder 30 inches; uniform ash color on neck, shoulders, sides, croup, and thighs, white or light gray on under surface and inside of limbs. They live in small groups of five or six individuals.

Reed, in music, the sounding part of several instruments, such as the clarionet, bassoon, oboe, and bagpipe,

ORGAN REED.

BAGPIPE REEDS.

so called from its being made from the outer layer of a reed. The name is also applied to the speaking part of the organ, though made of metal.

Reed, Andrew, an English philanthropist; born in London, England, Nov. 27, 1788; was educated in his native city and in 1811 was there ordained pastor of an independent congregation. He visited the United States in 1834, where he studied educational and religious conditions. In 1813 he established the London Orphan Asylum; in 1827 the Infant Orphan Asylum; in 1847 the Asylum for Fatherless Children in Croydon; and later the Royal Hospital for Incurables and the Royal Asylum for Idiots. He was the author of "Visits to the American Churches" (with the Rev. James Matheson, 2 vols. 1836); "The Day of Pentecost"; "The Revival of Religion" and "Advancement of Religion the Claim of the Times" (1847); etc. He died in London, England, Feb. 25, 1862.

Reed, Charles Alfred Lee, an American surgeon; born in Wolf Lake, Ind., July 9, 1856. He was Professor of Gynæcology and Abdominal Surgery at the Cincinnati College of Medicine and Surgery in 1882–1895; became gynæcologist at the Cincinnati Hospital in 1896; and was president of the American Medical Association in 1900–1901. His publications include many monographs in 1880–1900, and a "Text Book of Gynæcology" (1900).

Reed, Elizabeth Armstrong, an American author; born in Winthrop, Me., May 16, 1842. She was the only woman whose work was ever accepted by the Philosophical Society of Great Britain. She was chairman of the Woman's Congress of Philology in Chicago in 1893, and was a member of several learned societies. Her works include "The Bible Triumphant," "Hindu Literature: or the Ancient Books of India," "Persian Literature, Ancient and Modern," etc.

Reed, George Edward, an American educator; born in Brownville, Me., March 28, 1846. In 1889 was elected president of Dickinson College, Carlisle, Pa., and in 1899 became State Librarian of Pennsylvania.

Reed, Hugh, an American military officer; born in Richmond, Ind., Aug. 17, 1850; was graduated at the United States Military Academy in 1873. In 1884 he was granted leave of absence owing to ill health brought on by exposure on the Western plains, and was retired April 23, 1889. His publications include "A Calendar of the Dakota Nation," "Signal Tactics," "Cadet Regulations," "Artillery Tactics," "Military Science and Tactics," "Standard Infantry Tactics," etc.

Reed, James, an American clergyman; born in Boston, Mass., Dec. 8, 1834; was graduated at Harvard College in 1855. Later he was elected President of the New Church Theological School (Swedenborgian), Cambridge, Mass. He was also for several

ears president of the Massachusetts lome for Intemperate Women, and ditor of the "New Church Review." Iis publications include "Swedenborg nd the New Church," "Religion and ife," and "Man and Woman, Equal ut Unlike."

Reed, John Joseph, an American aval officer; born in New Jersey; as graduated at the United States Iaval Academy in 1861; served hrough the Civil War, being in all the attles with Admiral Farragut from he Southwest Pass of the Mississippi o Vicksburg in 1862–1863; was pro- oted rear-admiral in November, 900; and was appointed commandant f the Portsmouth navy yard in April, 901.

Reed, Thomas Brackett, an merican statesman; born in Port- nd, Me., Oct. 18, 1839; was gradua- ed at Bowdoin College in 1860; stud- d law; appointed assistant paymas- er United States navy in 1864; ad- itted to the Portland bar; member of he Maine Legislature 1868–1869, and f the Senate 1870; State attorney- eneral, 1870–1872; member of Con- ress, 1877–1899; and speaker of 51st, 4th, and 55th Congresses. In 1896 Ir. Reed was a prominent candidate or the Republican presidential nomi- ation. He resigned from Congress in 899, and resumed the practice of law n New York city. He died of uræmia t Washington, D. C., Dec. 7, 1902.

Reed Mace, also known by the ame of cat-tail, grows in ditches and arshy places, and in the borders of onds, lakes, and rivers. They are ll, stout, erect plants, sometimes six r eight feet high, with creeping root tocks, long flag-like leaves, and long, ense, cylindrical, brown spikes of mi- ute flowers. They are sometimes er- oneously called bulrush.

Reef, the portion of a square sail etween the head and any of the reef ands. The first reef in a square sail included between the head and the pper reef band; the second reef be- ween this and the next lower reef and, and so on. The object of the eef is to diminish the surface of the ail when the wind is blowing hard. balance reef is the uppermost or losest reef extending diagonally up- ard from the outer leech when close- eefed.

Reef, a chain, mass, or range of rocks in various parts of the ocean, lying at or near the surface of the water.

Reel, a lively rustic dance. In the United States the Virginia reel is widely popular.

Rees, John Krom, an American educator; born in New York city, Oct. 27, 1851; was graduated at Columbia University in 1872, and at the Columbia School of Mines in 1875. Subsequently he was director of the observatory and instructor in geodesy and practical astronomy in Columbia University, and in 1892 became Professor of Astronomy there. He was president of the New York Academy of Sciences in 1894–1896; secretary of the American Metropolitan Society in 1882–1896; was elected Fellow of the Royal Astronomical Society of London; and in 1901 received the decoration of Chevalier of the Legion of Honor.

Reese, David Meredith, an American physician; born in Philadelphia, Pa., in 1800; was graduated at the Medical Department of the University of Maryland in 1820; removed to New York city, where he became eminent in his profession; was physician-in-chief at Bellevue Hospital for several years, and afterward was county and city superintendent of public schools. He was the author of "Observations on the Epidemic of Yellow Fever," "Review of the First Annual Report of the Anti-Slavery Society," "Medical Lexicon of Modern Terminology" (1855); etc. He died in New York city, Aug. 12, 1861.

Reeves, Helen Buckingham, (nee **Mathers**), an English novelist; born in Crewkerne, Somersetshire, Aug. 26, 1853. Her novels treat of domestic English life, and are exceedingly popular.

Reeves, Marian Calhoun Legare, an American novelist; born in Charleston, S. C., about 1854. She began to write in 1866 under the pseudonym of "Fadette." Died recently.

Referendum, a system of legislation which consults all the electors of a State as to whether new laws shall be confirmed. In some cantons of Switzerland a method resembling the referendum has been practised since the 16th century. In all the Swiss

cantons, except Freiburg, the referendum is now established. According to the Swiss federal constitution, all constitutional amendments must be ratified by the Swiss electorate before they become law. Other measures must be submitted to the popular vote, if demanded within 90 days after their publication by 30,000 voters, or by the governments of eight cantons. During the 17 years, 1874 to 1891, out of 149 laws, 27 were referred to the people; of these 15 were rejected. The referendum has worked so well that it has conquered all opposition to it, and it is now generally regarded as a check on hasty and class legislation. There is a growing demand in the United States for the general introduction of direct legislation by means of the referendum, and in several places the system is practised. Amendments to State Constitutions are adopted, as a rule, by a referendum vote. In November, 1903, the electors of New York State voted by referendum on the question of a vast improvement of the Erie canal.

Refining of Metals, the processes by which the various metals are extracted from their ores, and obtained in a state of purity.

Reflecting Microscope, a form of microscope first proposed by Newton, in which the image formed by a small concave speculum may be viewed either by the naked eye or through an eye piece. The object is placed outside of the tube of the microscope, and reflects its image to the speculum by means of a plain mirror, inclined at an angle of 45° to the axis of the former.

Reflecting Telescope, a telescope in which the rays are received on an object-mirror and conveyed to a focus, at which the image is viewed by an eye piece.

Reflection, that which is reflected or produced by being reflected; an image given back from a reflecting surface. Also the act or habit of turning the mind to something which has already occupied it; thoughtful, attentive, or continued consideration or deliberation; meditation, thought.

Reflector, that which reflects, or throws back rays of light, heat, etc.; a reflecting surface. In optics, a device by which the rays proceeding from a luminous or heated object are thrown back or diverted in a given direction. The term mirror is less comprehensive than that of reflector, being usually only applied to such surfaces as afford definite images and colors, while a reflector may not merely be used for throwing back the rays of light and heat, or of heat only, but also the waves of sound.

Reform Acts, a term applied to certain acts of the British Parliament by which the regulations as to the parliamentary representation of the people were altered.

Reformation, the term generally applied to the religious revolution in the 16th century which divided the Western Church into two sections known as the Roman Catholic and the Protestant. Before this era the pope exercised absolute authority over the whole Christian Church with the exception of those countries in which the Greek or Eastern Church had been established. He also claimed supremacy in temporal affairs wherever his spiritual authority was recognized. Various abuses had, in process of time, sprung up in the Church, and attention had often been called to these both by laymen and clerics. The great movement known as the Reformation was started by Martin Luther, an Augustine monk of Erfurt, professor of theology in the University of Wittenberg; and what immediately occasioned it was the sale of indulgences in Germany by a duly accredited agent, Johann Tetzel, a Dominican monk, of Leipsic. Luther condemned this abuse first in a sermon and afterwards in ninety-five theses or questions which he affixed to the door of the great Church, October 31st, 1517. Luther urged his spiritual superiors and the pope to put a stop to the traffic of Tetzel and to reform the corruption of the Church in general. A heated controversy now arose, Luther was fiercely assailed, and in 1520 excommunication was pronounced against him by Pope Leo X. Upon this the reformer appealed to a general council; and when his works were burned at Mainz, Cologne, and Louvain, he publicly committed the bull of excommunication with the papal canons and decrees to the flames (December, 1520). From this time Luther formally separated from the

Roman Church, and many of the principal German nobles, the most eminent scholars, and the University of Wittenberg, publicly declared in favor of the reformed doctrines and discipline. Luther's bold refusal to recant at the Diet of Worms (April 17th, 1521) gave him increased power, while the edict of Worms and the ban of the emperor made his cause a political matter. Leo's successor, Adrian VI., now considered it necessary to interfere, but in answer to his demands for the extirpation of the doctrines of Luther he received a list of a hundred complaints against the papal chair from the German states assembled at the Diet of Nurnberg (1522). While Luther was publishing his translation of the New Testament, which was soon followed by the translation of the Old, and while Melanchthon was engaged on his Loci Communes (the first exposition of the Lutheran doctrines) serious preparations for the reform of ecclesiastical abuses were made in Pomerania, Silesia, in the Saxon cities, in Suabia, etc., and the Reformation made rapid progress in Germany. Luther's Liturgy had no sooner appeared (1522), than it was adopted in Magdeburg and elsewhere. Translations of the Bible into Dutch and French now appeared, and at Meux in France a Lutheran church was organized. In 1525 John, the successor of Luther's first patron Frederick in the Saxon electorate, Philip, Landgrave of Hesse, and Albert of Brandenburg, duke of Prussia, publicly declared themselves Lutherans. Aided in great measure by the state of political affairs, the movement continued to spread rapidly. In these circumstances the Emperor convened the Diet of Augsburg (June 1530), at which Melanchthon read a statement of the reformed doctrines, now known as the confession of Augsburg. The Catholics replied to this by requiring the reformers to return to the ancient church within a certain period. The princes who favored the new movement refused to comply with the demand, and in March of the following year they assembled at Schmalkald and formed the famous league, in terms of which they pledged themselves to uphold the Protestant cause. This decisive step soon attracted powerful support, largely because of its political importance, and among others who joined the Schmalkald League were Francis I. of France and Henry VIII. of England. After the death of Luther (1546) war broke out, but at the Peace of Augsburg (1555) the Reformation may be said to have triumphed when each prince was permitted to adopt either the Reformed or the Roman Catholic faith, and Protestantism thus received legal recognition.

Both in Italy and Spain Protestantism was mostly confined to the higher and cultivated classes, the Reformed faith taking scarcely any hold on the people at large. In Naples, Venice, Florence, and other cities Protestant churches were opened; but Protestantism was extirpated in Italy by the vigorous action of the Inquisition. In Spain a few Protestant churches were established, and many persons of mark adopted the views of the Reformers. But here also the Inquisition succeeded in arresting the spread of the religious revolution. In the Swiss states the progress of Protestantism was of much more importance. It found a leader in Ulrich Zwingli, a preacher in Zurich, who, by sermons, pamphlets, and public discussions, induced that city to abolish the old and inaugurate a new Reformed Church. Ultimately this movement was merged in political dissessions between the Reformed and the Roman Catholic cantons, and Zwingli himself fell in battle (1531). Between Luther and Zwingli there were differences of opinion, chiefly concerning the Lord's Supper, in which the former showed considerable acrimony towards his fellow-reformer. After many tedious contests Calvin's creed was virtually accepted in the Netherlands and elsewhere, and it was introduced into Scotland by Knox. In France the Reformation seemed at first to find powerful support. Margaret, Queen of Navarre, sister of King Francis I., and many of the higher ecclesiastics favored the reformed doctrine. The New Testament was translated into French, churches to the number of 2,000 were established in 1556, and the Huguenots as the Protestants were called, formed a large religious party in the state. Unhappily, however, the religious element was mixed up with the political hatreds, and in the civil strifes before

and after the Massacre of St. Bartholomew (1572) the religious movement declined. The abjuration of Protestantism by Henry IV. (1593) was a blow to the Huguenots, and though they obtained toleration and certain privileges by the Edict of Nantes this was finally revoked in 1685.

The Reformation in England was only indirectly connected with the reform movement in Germany. Wyclif and the Lollards, the revival of learning, the writings of More, Colet, and Erasmus, the martyrdom of Thomas Bilney, had all combined to make the doctrine and discipline of the church unpopular. This feeling was greatly increased when the writings of Luther and Tyndal's translation of the Bible found eager readers. Then the political element came in to favor the popular reform movement. Henry VIII., in his efforts to obtain a divorce from Catherine, found it necessary to repudiate the papal supremacy and declare himself by act of Parliament (1534) the supreme head of the Church of England. To this the pope replied by threats of excommunication, which were not, however, immediately executed. Yet the breach with Rome was complete, so far, at least, as the king was concerned. This movement was continued and the Reformation effected in all essential points during the reign of Henry's successor, Edward VI. The Protestant ritual and teaching was adopted by the Church; all images were removed from churches; a new communion service took the place of the mass; a First Book of Common Prayer was compiled by Cranmer and purged of distinctive Roman doctrine; and in 1549 the First Act of Uniformity enjoined the use of this book in all the churches. Still further in 1551 the newly established faith of the Reformers was summed up in the Forty-two Articles of Religion, which, in the reign of Elizabeth, became the Thirty-nine Articles of the Church of England. By these and other means the Reformation was established gradually throughout England.

In Scotland the movement was more directly connected with the Continent, and in particular with Geneva. In 1546–47 the Scottish Reformer John Knox joined the Protestant party; preached in Dundee, Perth, and St. Andrews, amid public tumult and the destruction of images, altars, and churches; and finally, under the protection of the Lords of Congregation, he established himself as a preacher of Protestantism in St. Giles', Edinburgh. From this center Knox travelled all over Scotland teaching the reformed faith; and such was the roused spirit of the people, that when the Scottish parliament assembled (1560) a popular petition was presented demanding the abolition of popery. This was promptly accomplished, and at the assembling of the new Church of Scotland shortly afterward, Knox presented his reformed system of government under the name of the First Book of Discipline, which was adopted by the assembly. The position thus secured by the reformer was maintained and the Reformation successfully established in Scotland. In Ireland for various causes the Reformation never made much progress.

Reformatory Schools, schools instituted for the training of juvenile offenders who have been convicted of an offense punishable by imprisonment.

Reformed Church, a religious body in the United States, whose designation has been changed from that of its progenitor, the Reformed Protestant Dutch Church. The Church was introduced into America in 1643. The Dutch language was used exclusively in worship down to 1763. The government of the Church is according to the Genevan model. The officers are ministers, elders, and deacons, who compose the consistory, to which the government of the individual church belongs. The particular synods, of which there are four, New York, Albany, New Brunswick, and Chicago, are delegated bodies composed of four ministers and four elders from each classis within the bounds of each synod. In 1867 the word "Dutch" was dropped from the corporate name of the body. "The Christian Intelligencer," a weekly journal devoted to the interests of the church was established in New York, 1828. There are two theological seminaries, one at New Brunswick, N. J., the other in connection

with Hope College, at Holland, Mich. Statistics, 1900: Churches 619; ministers, 698; members, 107,594.

Reformed Church in the United States, formerly German Reformed Church in the United States of America, an offshoot of the Reformed Church of Germany. The worship of the Church is liturgical; its government is presbyterian. Reception into the full communion of the Church takes place by the rite of confirmation. Christmas, Good Friday, Easter, and Whitsunday are observed with much solemnity. Eleven English and five German papers are published in the interest of the Church; and there are 16 theological and literary institutions under its control. Statistics, 1900: Churches, 1,660; ministers, 1,082; members, 243,545.

Reformed Episcopal Church, a denomination organized by members of the Protestant Episcopal Church who differed with it in certain matters of church practice and discipline. Statistics, 1900: Churches, 104; ministers, 103; members, 9,743.

Reformed Presbyterian Church, or **Cameronians,** a body of Christians who profess to hold the principles of the Church of Scotland at the period of the second Reformation, between 1638 and 1650. The Reformed Presbyterians in the United States in 1900 reported 113 churches, 124 ministers, and 9,790 members.

Refraction. When a beam of light traveling in a transparent medium, impinges obliquely upon the surface of another transparent medium, what occurs in the vast majority of cases is that a part of it is reflected, and a part of it enters the second medium, but in so doing is "refracted" or bent out of its former course. If, for example, the light travel in air and impinge obliquely on glass, the course of the refracted portion is bent so that the refracted light travels more directly or less obliquely through the glass; and, conversely, if the light travel in glass and impinge on an air surface, the portion which is refracted into the air will travel through the air more obliquely with respect to the refracting surface than the original light had approached it. The law of refraction was discovered by Snell in 1621, and is the following: The refracted ray is in the same plane with the incident and the reflected ray, and is therefore in the "plane of incidence," and the sine of the angle of incidence bears to the sine of the angle of refraction a ratio which remains constant, for any two media, whatever be the angle of incidence.

Refuge, Cities of, in Jewish law and history, six Levitical cities divinely appointed as places of refuge to one who had committed manslaughter, and was pursued by the "Revenger" or "Avenger" of Blood. If the case was proved to be one of murder, the perpetrator might be taken from the City of Refuge and put to death; if it was only manslaughter, the refugee had to remain in the city to which he had fled till released by the death of the high priest.

Refugee, a word that probably came into existence when the Protestants under Louis XIV. escaped from their oppressors to other lands, and a word was needed to describe the circumstances of their case. It is applied also to one who takes refuge; one who flees to a place of refuge or shelter, and to one who flies for refuge in time of persecution or political commotion to a foreign country.

Regalecus, the deal-fish. Each ventral fin is reduced to a long filament, dilated at the extremity, somewhat like the blade of an oar, whence they have been called oar fishes; caudal rudimentary or absent. Range wide; they have been taken in the Atlantic and Indian Oceans, the Mediterranean and on the coast of New Zealand. They are sometimes called king of the herrings, from the erroneous notion that they accompany shoals of the latter fish.

Regalia, the ensigns of royalty, including more particularly the apparatus of a coronation.

Regatta, originally a gondola race held annually with great pomp in Venice, and now applied to any important sailing or rowing race, in which a number of yachts or boats contend for prizes.

Regeneration, in biology, the genesis or production of new tissue to supply the place of an old texture lost

or removed. In some of the inferior animals an organ or a limb can thus be supplied; in man regeneration is much more limited in its operation. Thus, when a breach of continuity takes place in a muscle, it is repaired by a new growth of connective tissue, but muscular substance like that lost is not restored. In Scripture, regeneration is the state of being born again, i. e., in a spiritual manner.

Regent, one invested with vicarious authority, one who governs a kingdom during the minority, absence, or disability of the sovereign. In hereditary governments the regent is usually, but not necessarily or always, the nearest relative who is capable of undertaking the office. Also a member of a governing board; a trustee; as, the Regents of the Smithsonian Institute at Washington, of the New York State University, etc.

Regiomontanus, a German astronomer, whose real name was Johann Muller; born in Konigsberg, in Franconia, June 6, 1436. In 1471 he built an observatory at Nuremberg, but he returned to Rome on the invitation of Sixtus IV., who employed him in the reformation of the calendar. His "Kalendarium Novum" (New Calendar) is believed to be the first almanac issued in Europe. He died July 6, 1746.

Register, a device for automatically indicating the number of revolutions made or amount of work done by machinery; or recording steam, air, or water pressure, or other data, by means of apparatus deriving motion from the object or objects whose force, distance, velocity, direction, elevation, or numerical amount it is desired to ascertain. In music, the compass of a voice or instrument, or a portion of the compass of a voice; as the upper, middle, or lower register. Also, an organ stop, or the knob or handle by means of which the performer commands any given stop.

Regnard, Jean Francois, a French comic dramatist; born in Paris, in February, 1656. By common consent his rank in France is second to Moliere only. He died near Dourdan, France, Sept. 4, 1709.

Regular Clergy, the term applied in the Roman Catholic Church to priests who have taken the vows, and who are bound to follow the rules of some monastic order, as opposed to the secular clergy, that is, parish priests, etc., not connected with any of the orders.

Regulus, the star Alpha Leonis, the brightest in the constellation of the Lion.

Regulus, Marcus Attilius, a Roman general, celebrated for his patriotism and devotion in the service of his country. Made consul a second time about 256 B. C., with his colleague, Manlius Vulso, he commanded in the first war against Carthage. Taken prisoner by the Carthaginians, he was sent to Rome with an embassy, that peace might be procured on favorable terms, and bound himself by an oath to return if the terms were rejected. He, however, considered it his duty to advise the continuance of the war; which, being determined on, no entreaties or supplications could prevent him from fulfilling his solemn engagement; and the Carthaginians, on his return, put him to a cruel death.

Rehan (originally Crehan), **Ada,** an American actress; born in Limerick, Ireland, April 22, 1860. In 1865 she came with her parents to the United States. She first appeared on the stage in Newark, N. J., when 14 years old, but afterward returned to her studies for a year. She then appeared in Philadelphia, and later in New York. In 1879 she joined Augustin Daly's company. She frequently played before London audiences, and also in France and in Germany.

Reich, Jacques, an American etcher; born in Waniskoltz, Hungary, Aug. 10, 1852; settled in the United States in 1873; became skilled in pen-and-ink drawings and in the etching of portraits on copper; removed to New York in 1885. His important work includes a series of portraits of American and English authors and other prominent persons; a half life-size plate of President Roosevelt; and a large etching of J. Pierpont Morgan.

Reichenbach, Charles, Baron von, a German scientist; born in Stuttgart, Feb. 12, 1788. He gave his attention to animal magnetism in connection with which he believed he had

discovered a new force called Od, regarding which he published various works. Among his chemical discoveries were paraffin and creosote. He died in 1869.

Reichsrath, name of the representative council of the empire of Austria. See Austria.

Reichstag, the representative legislative body of the German nation as a whole, as the Bundesrath is of the separate German States. All laws of the empire must receive the votes of an absolute majority of the Reichstag and the Bundesrath. The president of the Reichstag is elected by the deputies. See German Empire.

Reid, Mayne, a British novelist; born in North Ireland, in 1818. His love of adventure took him to Mexico and then to the United States, where he traveled extensively as hunter or trader; he joined the United States army in 1845 and fought in the Mexican War. He afterward returned to London, where he became well known as a writer of thrilling juvenile stories, many of them based on his American experiences. He died near London, Oct. 22, 1883.

Reid, Samuel Chester, an American naval officer; born in Norwich, Conn., Aug. 25, 1783. He commanded the American privateer "General Armstrong," and repulsed the British attack in the harbor of Fayal, Azore Islands, Sept. 26, 1814, the enemy having three vessels with 2,000 men to his single vessel with 90 men. During 10 hours' fighting, the British lost 300 killed and wounded and the Americans two killed and seven wounded. He was made harbormaster and warden of the port of New York, invented a signal telegraph, reorganized the pilot-boat system, and established a lightship off Sandy Hook. He designed the present form of the United States flag, suggesting the retention of the original 13 stripes and the addition of a star for each new State. He died in New York city, Jan. 28, 1861.

Reid, Thomas, a Scotch philosopher; born in Strachan, Scotland, April 26, 1710. In 1764 he published his well-known work, "An Inquiry Into the Human Mind on the Principles of Common Sense." The same years he succeeded Adam Smith as Professor of Moral Philosophy in Glasgow University, a position which he occupied till 1781. He was the earliest expounder of what is known as the Scotch school of philosophy, in which he was followed by Dugald Stewart and Sir William Hamilton. His doctrines were adopted also by several eminent French philosophers. He died Oct. 7, 1796.

Reid, Whitelaw, an American editor; born in Xenia, O., Oct. 27, 1837. He graduated at Miami University in 1856; was on the editorial staff of several leading Ohio papers and was war correspondent; in 1869 became managing editor of the New York "Tribune," and, after 1872, editor-in-chief and in financial control. He twice declined appointment as minister to Germany; and was minister to France in 1889–1892, where he negotiated valuable reciprocity treaties. In 1892 he was the unsuccessful Republican candidate for Vice-President. He represented the United States as special ambassador at Queen Victoria's jubilee in 1897; was a member of the American-Spanish Peace Commission in 1898; and was the special ambassador of the United States at the coronation of King Edward VII. in 1902. Among other works he published "Ohio in the War" (1868) "Our New Interests," (1900); "Problems of Expansion" (1900).

Reighard, Jacob Ellsworth, an American educator; born in Laporte, Ind., July 2, 1861; was graduated at the University of Michigan in 1882; was placed in charge of the biological survey of the Great Lakes for the United States Fish Commission in 1898; and accepted the chair of zoology at the University of Michigan in 1892. He is the author of many scientific papers.

Reign of Terror, a period of the French Revolution, conspicuous for its horrors and cruelties. It is generally considered to extend from Jan. 21, 1793, the date of the execution of Louis XIV., to July 28, 1794, when Robespierre and other sanguinary leaders were guillotined on the spot where their victims had been killed.

Reindeer, the only domesticated species of the deer family. It extends

over the boreal regions of both hemispheres, and runs into several well marked varieties. Many authors consider the American reindeer or caribou, which has never been domesticated, as a distinct species. Both the male and female have antlers, and these are not alike on both sides, the great palmated brow antler being, as a rule, developed on one side only. In the winter the fur is long, grayish brown on the body; neck, hind-quarters, and belly white. In summer the gray hair darkens into a sooty brown, and the white parts become gray. To the Laplander the reindeer is the only representative of wealth, and it serves him as a substitute for the horse, the cow, the sheep and the goat. It is extensively employed as a beast of draught and carriage, being broken to draw sledges, or to carry men or packages on its back. In 1891 domestic reindeer were introduced into Alaska by Dr. Sheldon Jackson for the benefit of the natives who frequently suffered for food, and for purposes of transportation. In 1898 Dr. Jackson, as agent of the United States government, procured a colony of Laplanders to train the natives in the care of the reindeer.

Reindeer Moss, a lichen which forms the winter food of the reindeer. It is abundant in the pine forests of Lapland, and flourishes even when they have been burnt. Reindeer feed upon it and dig for it when it is covered by snow. It tastes like wheat bran, but leaves a slightly burning sensation on the palate.

Reinhart, Benjamin Franklin, an American artist; born near Waynesburg, Pa., Aug. 29, 1829. His most important works include the engravings: "Cleopatra"; "Washington Receiving the News of Arnold's Treason"; "After the Crucifixion," etc., and numerous portraits. He died in Philadelphia, Pa., May 3, 1885.

Reinhart, Charles Stanley, an American artist; born in Pittsburg, Pa., May 16, 1844. He exhibited in Paris, Munich, and New York city, and was a member of numerous art associations. He died in Philadelphia, Pa., Aug. 30, 1896.

Reinsch, Paul Samuel, an American educator; born in Milwaukee, Wis., in 1869; was graduated at the University of Wisconsin in 1892 and at its Law Department in 1894. After studying abroad, he was made Professor of Political Science at the University of Wisconsin in 1899. His publications include "The Common Law in the Early American Colonies" (1899); "World Politics at the End of the Nineteenth Century as Influenced by the Oriental Situation" (1900); "Colonial Government" (1901); and many magazine articles.

Relapsing Fever (also known as Famine Fever and Seven-day Fever), one of the three great species of continued fever, the two others being typhus and typhoid.

Release, a discharge of a right; an instrument in writing, by which estates, rights, titles, entries, actions, and other things are extinguished, and discharged, and sometimes transferred, abridged, or enlarged; and, in general, a person's giving up or discharging the right or action he has, or claims to have, against another or his lands.

Relics. Articles regarded as sacred in the Roman Catholic and Greek Churches, such as the "Holy Coat of Treves," said to have been worn by Christ, alleged pieces of the cross on which Christ was crucified, alleged bones of martyrs and other persons held in reverence as saints, etc. It is claimed that a bone alleged to be of St. Anne, the mother of the Virgin Mary, has effected many miraculous cures in New York city in 1903.

The Greek and other Oriental Churches, and most of the Oriental sects, agree with Roman Catholics in the practice of relic worship. On the contrary, the Reformed Churches, without exception, have rejected the usage; though non-religious relic worship is rife enough, in the form of swords of Wallace and Bruce, locks of Prince Charlie's hair, etc. The practice of relic worship forms a notable feature of the Mohammedan usage of pilgrimages, and is an even more important feature of Buddhism.

Religious Liberty, or Liberty of Conscience, is the recognition and assertion by the state of the right of every man, in the profession of opinion and in the outward forms and requirements of religion, to do or abstain from doing whatever his individual conscience or sense of right sug-

gests. Religious liberty is opposed to the imposition by the state of any arbitrary restrictions on forms of worship or the propagation of religious opinions, or to the enacting of any binding forms of worship or belief. The limit of religious liberty is necessarily the right of the state to maintain order, prevent excesses, and guard against encroachments on private right. In the organization of civil and ecclesiastical government which prevailed from Constantine to the Reformation, persecution was in general only limited by dissent; and universal submission to the dominant Church became the condition of religious peace throughout Christendom, while religious liberty was unknown. The contest of opinion begun at the Reformation had the effect of establishing religious liberty, as far as it at present exists, but the principle itself was so far from being understood and accepted in its purity by either party that it hardly suggested itself even to the most enlightened reasoners of that age. While the American colonies were dependent on Great Britain, religious liberty in the full sense existed only in Rhode Island, toleration in Maryland having been limited by laws which punished conscientious utterances regarding religious dogmas as blasphemy. For many years after independence the laws of Massachusetts, New Hampshire, and Connecticut limited religious liberty.

Rembrandt, Van Ryn, one of the most celebrated painters and engravers of the Dutch school; born in Leyden, Holland, July 15, 1606. He acquired his art from several masters at Amsterdam, and early in life grew famous, his studio being crowded with pupils, and his works selling rapidly. Rembrandt was master of all that relates to coloring, distribution of light and shade, and composition, and though deficient in other requisites of a true artist, it cannot be denied that his pencil is masterly and unique, possessing an energy and effect belonging to no other painter. His etchings have wonderful freedom, facility, and boldness. Rembrandt was twice married, resided during the greater part of his life at Amsterdam, and acquired a large fortune. He died in Amsterdam, and was buried Oct. 8, 1669.

Remenyi, Edouard, an Hungarian violinist; born in Heves, Hungary, in 1830. In 1851, after the Hungarian revolution, he was forced to flee to the United States, but returned to Europe in 1853. In 1854 he visited London, where he was appointed solo violinist to Queen Victoria. In 1860 he obtained his amnesty and returned to Hungary, where he attained great distinction. In 1878 he returned to the United States, where he spent much of his time and gave many concerts, though during these years he also made visits to other countries. Died in San Francisco, Cal., May 15, 1898.

Remey, George Collier, an American naval officer; born in Burlington, Ia., Aug. 10, 1841; was graduated at the United States Naval Academy in 1859; served with distinction during the Civil War, and was captured during the assault on Fort Sumter, in 1863. When the war with Spain broke out he was placed in command of the naval base at Key West, Fla. He was promoted rear-admiral in 1898 and in 1900 was given command of the Asiatic Station at Yokohama, and in this capacity directed the operations of the United States naval forces in China.

Remington, Philo, an American inventor; born in Litchfield, N. Y., Oct. 31, 1816. He entered the small arms factory of his father, and for 25 years superintended the mechanical department. The perfecting of the Remington breech loading rifles and of the Remington typewriter was largely due to his inventive skill. In 1886 he withdrew into private life.

Remington, Frederick, an American artist and author; born in Canton, N. Y., Oct. 4, 1861; was educated at the Yale Art School, and at the Art Students' League, New York. He is one of the most conspicuous of American artists in "black and white."

Remington, Joseph Price, an American pharmacist; born in Philadelphia, Pa., March 26, 1847; was graduated at the Philadelphia College of Pharmacy in 1866; and became Professor in the Pharmaceutical Laboratory and dean of the Philadelphia College of Pharmacy in 1893. He is a member of many American and for-

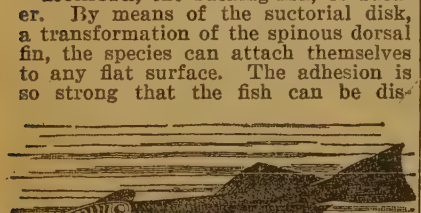
eign pharmaceutical and medical bodies, and author of "Remington's Practice of Pharmacy."

Remittent Fever, one of the varieties of fever arising from malaria or marsh poison — one being intermittent fever, or ague. In its milder forms it scarcely differs from severe intermittent fever; while in its more serious form it may approximate closely to yellow fever.

Remonstrance, The Grand, in English history, a remonstrance consisting of 206 articles, condemning the arbitrary procedure of Charles I. It was carried in the House of Commons, Nov. 22, 1641, by a majority of 11, and presented to the king Dec. 1.

Remonstrants, a name given to the Dutch Protestants, who, after the death of Arminius (A. D. 1609) continued to maintain his views, and in 1610 presented to the States of Holland, at Friesland, a remonstrance in five articles formulating their points of departure from Calvinism. The Remonstrants still form a small but liberal and scholarly sect in Holland.

Remora, the sucking-fish, or sucker. By means of the suctorial disk, a transformation of the spinous dorsal fin, the species can attach themselves to any flat surface. The adhesion is so strong that the fish can be dislodged only with difficulty, unless pushed forward with a sliding motion. Being bad swimmers, they attach themselves to vessels, or to animals having greater power of locomotion than themselves; but they cannot be regarded as parasites, as they do not obtain their food at the expense of their host.



REMORA, OR SUCKER.

Remsen, Ira, an American chemist; born in New York city, Feb. 10, 1846; was graduated at the College of the City of New York in 1865, and later at the College of Physicians and Surgeons, and at the University of Gottingen; was Professor of Chemistry at Williams College in 1872–1876; founded the "American Chemical Journal" in 1879. He is a member of many scientific organizations and societies; and the author of numerous textbooks including "The Principles of Theoretical Chemistry"; "Inorganic Chemistry"; "Chemical Experiments"; etc.; became Professor of Chemistry at Johns Hopkins University in 1876, and succeeded Dr. Daniel Coit Gilman as president there in 1901.

Remus, the twin brother of Romulus, who was the fabled founder of Rome. According to the old myth, Romulus killed his brother.

Renaissance, a name given to the great intellectual movement which marks the transition from the Middle Ages to the modern world. It was a change in attitude of mind and ideal of life, in philosophy, art, literary criticism, political and religious thought. Substantially a revolt against the dogmatism of the Middle Ages, the new spirit claimed the entire liberation of reason, and passionately recognizing and studying the rich humanity of Greece and Rome, aimed at a complete rehabiliation of the human spirit with all the free activities and arts and graces. To the same impulse belonged also the invention of printing and multiplication of books, new methods of paper making, the use of the mariner's compass, the discovery of America, and the exploration of the Indian Sea. No definite date can be given for the beginning of the Renaissance. Long before the close of the Dark Ages there were isolated scholars and thinkers who anticipated the new light. In its main elements the movement originated in Italy toward the end of the 14th century, and, attaining its full development there in the earlier half of the 16th, the Renaissance communicated itself throughout the whole of the rest of Europe; France, Germany, England, and other countries participating later in the movement, which in each of them took a somewhat different shape.

Renan, Joseph Ernest, a French writer; born in Treguier, France, Feb. 27, 1823. In 1862 he was appointed Professor of Hebrew, Chaldee, and Syriac in the College de France, but the skeptical views manifested in his "Life of Jesus" (1863), raised an outcry against him, and he was removed from his chair, to be restored again, however, in 1871. This work, the publication of which caused intense excitement throughout Europe, was the first part of a comprehensive work on the "History of the Origins of Christianity," written from the standpoint of one who disbelieves in the supernatural claims of Christianity. Renan's latest important work is the "History of the People of Israel till the Time of King David." He became a member of the French Academy in 1878. He died Oct. 2, 1892.

Renegade, one who renounces his religious faith and adopts another creed, more particularly one who renounces Christianity and becomes a Moslem; in a wider sense the word is practically synonymous with traitor, that is, one who deserts to the enemies of his country. Applied in pioneer American history to a white man who allied himself to the Indians.

Rennet, an aqueous infusion of the dried stomach of the calf. It is a valuable agent in the coagulation of the casein of milk preparatory to the manufacture of cheese. It appears to contain a soluble ferment which acts directly on the milk. Also a variety, or rather several sub-varieties, of apple, with more or less spotted fruit; ground color gray, or golden. There is a French and a Canadian rennet; called also a queen.

Reno, Jesse Lee, an American military officer; born in Wheeling, W. Va., June 20, 1823; was graduated at the United States Military Academy in 1846; served with distinction in the Mexican War. In November, 1861, he was appointed Brigadier-General of volunteers; distinguished himself at the capture of Roanoke Island and in the engagements at Newbern and Camden; was promoted Major-General of volunteers in July 1862; and was present in the actions at Manassas and Chantilly. He was killed at South Mountain, Md., on Sept. 14, 1862, while leading a charge.

Reno, Jesse Wilford, an American inventor; born in Fort Leavenworth, Kan., Aug. 4, 1861; son of Maj.-Gen. Jesse L. Reno; was graduated at Lehigh University in 1883 and afterward took a special course in mining and engineering; was engaged in mining in Colorado in 1885–1890. He invented an inclined elevator or moving stairway in 1892, which has since been largely introduced in department stores, etc.

Reno, Marcus A., an American military officer; born in Illinois about 1835; was graduated at the United States Military Academy, and was appointed a brevet 2d lieutenant in the 1st Dragoons in 1857. He was promoted colonel U. S. A., and Brigadier-General, U. S. V., for meritorious services during the war, in 1865; and was dismissed from the service April 1, 1880. In 1876 he took part in the campaign against the Sioux Indians, under Sitting Bull, as second in command of his regiment, in which Gen. George A. Custer and nearly all of the regiment were killed. For failing to support his comrades in the fight and for other serious charges he was dismissed from the service. He died in Washington, D. C., March 31, 1889. Reno's bravery was undoubted, and by many his dismissal is regarded as unjust.

Renwick, James, an American author and physicist; born in Liverpool, England, May 30, 1792; was graduated at Columbia College, New York, in 1807. In 1820 he was made Professor of Chemistry and Physics in that college, a position he held till 1853. In 1838 he was appointed by the United States government one of the commissioners to explore the line of the boundary between Maine and New Brunswick. He wrote, besides smaller text-books and translations, "Treatise on the Steam Engine"; several books on mechanics, and biographies of De Witt Clinton, Jay and Hamilton, and others. He died Jan. 12, 1863.

Renwick, James, an American architect; born in New York city, Nov. 3, 1818; son of the preceding; was graduated at Columbia College in 1836; first engaged in civil engineering; but later devoted himself to architecture. Among the many build-

ings which he planned are Grace Church, New York city, completed in 1845; the Smithsonian Institution and the Corcoran Art Gallery, in Washington, D. C.; the Vassar College buildings in Poughkeepsie, N. Y.; the Young Men's Christian Association and St. Patrick's Cathedral (R. C.), in New York city. He died in New York city, June 23, 1895.

Repentance, the act of repenting; the state of being penitent; sorrow or regret for what has been done or left undone by one's self; especially sorrow and contrition for sin.

Replevin, a personal action which lies to recover possession of goods or chattels wrongfully taken or detained, upon giving security to try the right to them in a court of law, and to return them if the suit is determined against the plaintiff. Originally a remedy peculiar to cases of wrongful distress, it is now applicable to all cases of wrongful taking or detention. Also the writ by which goods and chattels are replevined.

Replica, in the fine arts, the copy of a picture, etc., made by the artist who executed the original.

Reporting, an important branch of journalism; the act, system, or practice of making reports of meetings, debates, or the like.

The methods of newspaper reporting in the United States have been developed to a degree of the greatest efficiency. A first-class reporter commands higher pay than most editors, and some of the articles which appear in the daily press are equal, or superior in descriptive power to the best efforts of well known authors. American reporters have also done honorable and able detective work in saving the innocent and bringing the guilty to punishment. The rapidity with which reports of speeches, meetings, notable incidents, etc., are furnished to the press is something almost incredible to the uninitiated. The various press associations of the country are the principal factors in the work of disseminating the results of reportorial work.

Repousse, a term applied to a kind of ornamental metal work, formed in relief by striking on the metal from behind with a punch or hammer till the required forms are roughly produced in relief on the surface; the work is then finished by the process of chasing. The work of Benvenuto Cellini (1500–1570), in this branch of art, is the most celebrated. Common work of this kind, as for tea or coffee pots, is executed in pewter and Britannia metal, and then electrotyped.

Repplier, Agnes, an American essayist; born in Philadelphia in 1859. Her published works include: "Books and Men"; "Points of View"; "Essays in Miniature"; "Philadelphia: the Place and the People"; etc. She has also compiled a "Book of Famous Verse."

Representative, an individual standing as a type. The representative theory contended for by Swainson and other quinarians was that in each circle particular types were represented. In every circle of birds, for instance, there were raptorial, insessorial, rasorial, grallatorial, and natatorial types. Any representative of these was analogous to the corresponding type in all other circles.

Representatives, House of, one of the branches of the Congress, also known as the Lower House. The members of this branch are elected directly by popular vote. In it is vested by the National Constitution the sole right to originate laws concerning the finances of the country. The Committee on Ways and Means of the House is the original source of all tariff legislation, and all bills providing for the raising or expenditure of public moneys have their origin in the House, In each of these two forms of legislation the House has the limited cooperation of the Senate, viz., the Senate may amend a tariff bill or resolution appropriating public moneys in the line either of increasing or decreasing specific amounts. The House has the privilege of passing on these Senate amendments, and if it declines to accept any part of such changes, it is customary to appoint a Conference Committee consisting of an equal number of members from the House and Senate, to whom the disputed subject is referred, and the report of this committee is generally accepted in the light of a compromise by both houses. The membership of the House

is based on the population of the country as ascertained decennially by the census, and therefore changes every 10 years.

Representative Government, that form of government in which either the whole of a nation, or that portion of it whose superior intelligence affords a sufficient guarantee for the proper exercise of the privilege, is called on to elect representatives or deputies charged with the power of controlling the public expenditure, imposing taxes, and assisting the executive in the framing of laws.

Reprieve, the suspension or delay of the carrying out of a sentence (generally of death) on a prisoner. It is popularly but erroneously supposed to signify a permanent remission, or commutation of a capital sentence.

Reprise, in maritime law, a ship recaptured from an enemy or pirate. If recaptured within 24 hours of her capture she must be restored to her owners in whole; if after that period, she is the lawful prize of her recaptors.

Reproduction, the term applied to the whole process whereby life is continued from generation to generation. The simplest forms of reproduction are found among the single-celled plants and animals. There we may find an organism like Schizogenes, multiplying by breakage, reproducing by rupture, presumably when the cell has overgrown its normal size; in others numerous buds are liberated at once, as in Arcella and Pelomyxa; in many, familiarly in the yeast plant, one bud is formed at a time; in most the cell divides into two or many daughter cells. The formation of many daughter cells or spores is little more than ordinary division taking place repeatedly in rapid succession, and within the substance of the parent cell — in other words, in limited time and space.

It has been shown that reproduction begins among single-celled organisms in a kind of rupture; but even among the more complex forms of life an equally crude mode of reproduction sometimes occurs. The cast-off arm of a starfish may regrow the entire animal with a readiness that suggests a habit; some kinds of worms (e. g., Nemerteans) break into pieces, each of which is able to regrow the whole; large pieces of a sea anemone or of a sponge are sometimes separated off and form new organisms. It is easy to show experimentally that parts cut from a hydra, a sponge, or a sea anemone, from a seaweed, a moss, or a tree, may in certain conditions grow into an entire organism.

But the usual mode of asexual reproduction is by the formation of definite buds. When these buds remain continuous, colonial organisms result, like many sponges, most hydroids, Siphonophora like the Portuguese man-of-war, many corals, almost all the Polyzoa, and many Tunicates. The runners of a strawberry and the suckers which grow around a rose bush illustrate the same state. But in a few plants, like the liverwort and tiger lily, a kind of bud may be detached, and thus begin a new life. It is among animals, however, that the liberation of buds is best illustrated, for this mode of reproduction occurs in hydra and many hydroids, in some "worms," and in Polyzoa, and even in animals as highly organized as Tunicates. Budding is usually exhibited by comparatively simple and by sedentary animals, and seems indeed to be natural to vegetative organisms. It is easy to understand why asexual reproduction is among many-celled animals always associated with sexual reproduction, and entirely replaced by it in the higher forms. For budding is only possible when the organism is not very highly differentiated, or when part of the body retains many indifferent units; moreover, it is an expensive way of securing the continuance of generation, and is without the advantage to the species which undoubtedly results from the mingling of two life-currents in sexual reproduction.

Sexual reproduction in its fully differentiated form involves (a) the distinctness of two parent organisms, (b) the formation of two different kinds of reproductive elements — e. g. spermatozoa produced by the male and ova by the female, and (c) the fertilization of the egg cell by a male element. Moreover, the process of sexual reproduction also includes the sexual union of the two parents, or

other ways in which fertilization is secured, while in some cases the fertilized ovum develops in organic relation with the mother organism, from which it is eventually separated as an embryo. But, while many organisms exhibit fully differentiated sexual reproduction, and while the essentials of the process are always the same, there are not a few important variations in detail.

Reproductive maturity — the blossoming of the individual life — occurs about the time when growth ceases. In the lower animals sexual maturity is attained relatively sooner than in the higher forms; but there are many strange cases of precocious and retarded reproduction. The physiology of reproduction must take account of that profound reaction which affects the whole system as sexual maturity is attained, of the various ways in which the reproductive elements are separated from the parents, of the relation which, alike in plant and animal, may be established between the fertilized egg cell and the mother organism, and of the way in which an embryo thus nurtured eventually becomes independent. Moreover, there are often highly evolved psychical activities associated with reproduction — notably the love between mates and between parents and offspring.

But, while reproduction is a blossoming of the individual life, it is also in a sense the beginning of death. The flower and fruit often end the life of the plant. It may be that the processes of rupture by which some of the simplest organisms reduce their bulk and multiply their kind are but a few steps from the more diffuse dissolution of death. It is a fact that in some simple animals — e. g., some "worms" — the parent, and especially the mother, ruptures and dies in liberating the reproductive elements. So, among higher forms, not a few insects — mayflies, locusts, butterflies — die a few hours after reproduction. The exhaustion is fatal, and the males are sometimes victims as well as their mates. In higher organisms the fatality of the reproductive sacrifice has been greatly lessened, yet death may tragically occur, even in human life, as the direct nemesis of reproduction. In short, the process by which new lives begin, by which the continued life of the species is secured, tends to be antagonistic to the life of the parent individuals. The old leaves fall off the tree, and their places are filled by others.

Reptilia, reptiles; cold-blooded, oviparous, or ovoviviparous, vertebrate animals having the skin covered with scales or scutes; heart with two auricles, ventricular chamber incompletely divided. Respiration takes place by lungs, respiratory movements being slow and irregular. Intestinal tract and urogenital organs open into a common cloaca. When the appendicular parts of the skeleton are present, the sternum is never replaced by membrane bone, and the posterior sternal ribs are attached to a median prolongation of the sternum. The metatarsal bones are not anchylosed among themselves or with the distal tarsal bone. The fœtus is inclosed in an amnion and allantois, and nourished from the vitellus.

The first appearance of reptiles is believed to be indicated by remains of a marine Saurian of Carboniferous age. Proterosaurus is found in the Permian. In Mesozoic times the reptilian type appears in such variety and in such a high state of development that this era has been distinguished as the Reptilian Age. In the Trias large marine Saurians and Dinosaurs are met with; more gigantic forms were developed in the Jurassic period; and the class attained its highest culmination in the Chalk.

Republic, a commonwealth; a form of political constitution in which the supreme power is vested, not in an hereditary ruler, but in the hands either of certain privileged members of the community or of the whole community. Theoretically, the purest and most perfect form of a republic is a state in which all the members of the community meet in public assembly to enact laws, and transact all other national business. Such a system is, however, practicable only in very small states, and has therefore, given way in all modern republics to the representative system — that is, one in which the supreme power is vested in rulers chosen periodically by and from the whole body of the people, or by their representatives assembled in

congress or national assembly, as in he present French republic. The re- ublics of Venice and Genoa were ex- lusive oligarchies, the supreme power eing vested in the nobles of a few rivileged persons. The republics of he United States and Switzerland are ederal republics — that is, composed f a number of separate states bound ogether by compact, subject to a entral government for all national urposes, but having powers of self- overnment in matters affecting indi- idual states.

Republican Party, one of the two reat political parties in the United tates. The term Republican has had t different times, different significa- ions. In 1792 a faction of the Anti- 'ederalists, advocating more direct ontrol of the government by the peo- le, further restriction of supreme au- hority, and a stronger emphasis of tates Rights, began to be known as he Republican party. The name Re- ublican as the title of a party went ut of use after the election of 1824, ut was resumed in 1856, during the dministration of Mr. Pierce. From he first it opposed slavery and fa- ored a strong central government, ot acting through the state, but di- ectly upon the people, opposed to the)emocratic party, which maintained he rights of individual States. The arty was closely identified with the nti-slavery movement, and was the arty of the North in the Civil War. braham Lincoln was the first Re- ublican president, and his election as followed by the secession of the outhern States. Since Buchanan very president has been a member of he Republican party except Grover leveland, twice elected.

Repudiation, an arbitrary meth- d for the extinguishment of a ebt, by simply refusing to acknowl- lge the obligation. Twice in the his- ory of the country have several tates taken advantage of the power repudiate — once after the com- ercial crisis of 1839, in which the nited States Bank stopped payment, nd again in the years following the ivil War. In the latter period Vir- nia, North and South Carolina, Geor- a, Florida, Alabama, Mississippi, ouisiana, and Arkansas were among he repudiators.

Repulsion, in physics, the force which compels certain bodies or their particles to recede from each other.

Resaca de la Palma, a ravine in Cameron co., Texas, where on May 9, 1846, the United States troops under Taylor defeated the Mexicans under General Arista, and opened the way to Matamoros.

Resedaceæ, weldworts, or rese- dads; an order of hypogynous exogens, alliance Cistales; herbs, rarely small shrubs, with alternate leaves and minute gland-like stipules; flowers in racemes or spikes. They are mostly from the N. temperate part of the Eastern Hemisphere, but a few species are from the Cape of Good Hope and California.

Reservation, in the United States, a tract of the public land reserved for some special use, such as Indian tribes, national parks, notable battlefields, large military cemeteries, etc.

Reservation, Mental, the act of reserving or holding back some word or clause which is necessary to convey fully the meaning really intended by the speaker. It differs from equivoca- tion in this, that in the latter the words employed, though doubtful, and perhaps not fitted naturally to convey the real meaning of the speaker, are yet, absolutely speaking, and without the addition of any further word or clause, susceptible of that meaning. There are several varieties of mental reservation, differing from each other, and all differing from equivocation. But as regards the morality of the subject all the forms of language cal- culated to deceive may be classed to- gether. Mental reservation is of two kinds, purely mental and not purely mental. By the former designation is meant a mental reservation which cannot be detected, whether in the words themselves, or in the circum- stances in which they are spoken. A "not purely mental" reservation is that which, though not naturally im- plied or contained in the words, may nevertheless be inferred or suspected, either from them or the circumstances in which they are used.

Reservation, Papal, the privilege, introduced by John XXII. and con- tinued by Clement VI. and Gregory XI., of reserving to the Holy See the

power of electing bishops, formerly possessed by the clergy and people of the several cities. Reservations were abolished by the Council of Constance, March 25, 1436.

Reserve, in military usage, a body of troops kept for any emergency; that portion of an army drawn up for battle which is reserved to support the other lines as occasion requires.

Reserve Forces, those troops which, by the terms of their engagement with the State, compulsory or otherwise, are liable to be at once recalled to the field army in case of war. In the United States the National Guard is subject to call for immediate duty.

Reservoir, an artificial basin in which a large quantity of water is stored.

Reservoir, Jerome Park. An artificial reservoir which when completed will form a part of the waterworks system of New York city.

The Jerome Park reservoir, as the new storage basin is called, is located on a lofty ridge, which runs N. and S. between the valleys in which are located the New York and Putnam and the Harlem railroads. The site is admirably adapted by nature for the excavation of a large artificial basin; for at this point there is a general depression in the summit of the ridge, and the labor of excavating and embanking the reservoir has been proportionately lessened. The greatest length of the reservoir in a N. and S. direction is a little over one mile, and its greatest width half a mile, its area being 229 acres. The whole of the bottom is being excavated to a uniform depth of 26½ feet.

Though the total amount of excavation is greatly lessened by the natural depression of the ground, there is no point where it is carried less than 16 feet below the natural surface, the bottom of the finished reservoir being everywhere 31½ feet below the top of the embankment.

The present estimate for the total excavation is 6,900,000 cubic yards of material, of which 3,900,000 is earth and 3,000,000 is solid rock. Of this total 2,286,000 cubic yards of earth have been taken out and 1,647,000 yards of rock, so that something less than two-thirds of the work has been completed. The capacity of the E. basin is 1,085,000,000 gallons, and the capacity of the W. basin 765,000,000, making a total of 1,850,000 gallons. The excavation of the W. side of the reservoir was completed in 1901, and in the spring of 1902 the process of concreting and finishing was under way. The total cost of the finished work will be $5,840,000.

Residence. The length of time which a person shall remain within the limits of a State in order to give him a legal residence there, varies in the different commonwealths, each government being the judge of the qualifications necessary to entitle a denizen to claim permanent residence within its boundaries. An alien who desires to become a naturalized citizen of the United States must prove a residence of five years in the country previous to admittance to the right of adoption.

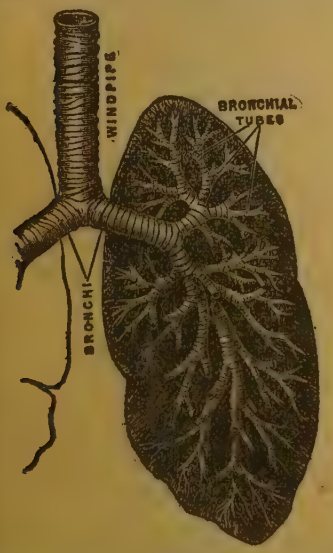
Resin, or **Rosin,** a widely distributed class of vegetable substances, characterized by being insoluble in water, soluble to different degrees in alcohol, ether, and liquid hydrocarbons, softening or melting at a moderate heat, and at a higher temperature burning with a smoky, luminous flame. In the crude condition they form amorphous masses, having a conchoidal fracture, and are either neutral or acid. Some are employed in medicine, others in the preparation of varnishes, sealing wax, and similar substances.

Res Judicata, in law, a term meaning that the subject matter of an action has been already decided by a court of competent jurisdiction. A matter so decided cannot again be made a ground of action between the same parties.

Resolution, in law, a solemn judgment or decision. In mathematics, the operation of separating any expression into factors; that is, the operation of finding two or more expressions such that their product is equal to the given expression. Resolution of an equation: The same as reduction of an equation. In medicine, the passing away, without suppuration, of a tumor or of inflammation. In music, the process of relieving dissonance by succeeding consonance.

Resonance, or **Resonancy,** in acoustics, (1) Sound reflected by a surface less than 112.5 feet from the spot whence it originally traveled. The direct and the reflected sounds are confounded, but the one strengthens the other. Bare walls tend to be resonant; walls hung with tapestry are not so. (2) The increase of sound produced by a sounding board, or by the body of a musical instrument. In medicine, a more or less shrill sound heard by auscultation in the larynx or lungs of a person speaking, or of one affected with chest disease.

Respiration, a part of the life of all organisms, animal and vegetable. It is a series of chemical changes, the first of which is the absorption of oxygen into the body, and the last of



THE TRACHEA (WINDPIPE), BRONCHI, AND ONE OF THE LUNGS IN SECTION.

which is the excretion of carbonic acid. The respiration of plants comes under the head of vegetable physiology, and the general relation of the function of respiration to the other bodily functions, under physiology.

In all animals which possess a blood stream the respiration is carried on by the simple diffusion of oxygen into and of carbonic acid out of the blood through a thin membrane from and into the air or water in which the creature lives. The essential structure, therefore, of all breathing organs, lungs, gills, or tracheæ, must be the same: a thin membrane exposed on the one side to the oxygen-containing medium, air or water, in which the animal lives, on the other side to the blood flowing in a network of thin-walled vessels, so that the gases that have to pass in and out of the blood are only separated from the air or water from which and into which they have to pass by thin partitions — by the membraneous wall of the breathing organ, and by the thin wall of the blood vessels.

The respiratory mechanism consists of the lungs, a series of minute air chambers with a network of capillaries in the wall, the air passages from the air chambers of the lungs to the outer air, and the chest walls with their muscles, which act like bellows and change the air in the lungs. Let us begin with the air passages. There are first the nose and mouth; these join the upper part of the gullet, known as the pharynx. From the pharynx arises the windpipe (trachea); this passes through the voice box (larynx) into the chest cavity; there it divides into two passages (the bronchi); the bronchi go on dividing again and again, generally into two; the ultimate divisions (the bronchioles) open into clusters of air chambers. The air chambers are about $\frac{1}{100}$ inch in diameter. It has been estimated that there are some 725,000,000 of them, and that their total surface is about 2,000 square feet. The walls of the air chambers are formed of a thin membrane in which the blood and lymph capillaries ramify. Minute openings lead from the air chambers into the lymph spaces of the membrane. The membraneous walls are partly formed of elastic tissue. It is this that gives to the lungs their elasticity. The larger air passages (trachea and bronchi) are kept open by horseshoe-shaped plates or cartilage; muscles stretch between the poles of the horseshoe, complete the ring, and permit the size of the passages to vary, at the same

time resisting over-distension when the internal pressure rises. These larger air passages are lined by a mucous membrane, containing mucous glands; the innermost layer is a ciliated epithelium; the cilia lash upward, and thus keep the passages free from mucus and remove foreign particles. As the passages become smaller they lose their cartilages, and the muscles form a continuous circular layer.

The chest is an air-tight chamber enclosing the lungs and the heart. The walls of the chest are formed of bones (the ribs, sternum, and backbone) and muscles; the bones and muscles are so arranged that the size of the chest cavity can be altered. In this way the chest acts as a bellows and moves air in and out of the lungs. The ribs are sloped slightly downward, especially after an expiration; when an inspiration is taken certain muscles fix the upper ribs, and those muscles connecting the ribs to each other contract and the ribs are raised, and thus the size of the chest cavity is increased. At the same time a flat muscle called the diaphragm, which separates the chest cavity from the rest of the body cavity, and which after an expiration is arched upward (by the pressure of the abdominal viscera on it, the viscera in turn being pressed on by the abdominal walls), forcibly contracts, becomes flatter, and therefore enlarges the size of the chest cavity, forcing the abdominal viscera downward and causing the abdomen to protrude. In these two ways, then, the size of the chest cavity may be increased. The result of this enlargement is that the pressure of the air within the cavities of the lungs is lowered; air therefore from without rushes through the nostrils (one ought not to breathe through one's mouth) down the windpipe into the lungs, and thus a fresh supply of oxygen is introduced. The movements which produce this result are known as the inspiratory movements. In making an expiration the reverse effects are produced; the chest cavity is made smaller, the pressure of the air in the lungs increases, and some rushes out through the nostrils into the air till the pressures inside and outside are equalized. An ordinary expiration is effected by the elasticity of the lungs, by the fall of the ribs, unsupported by the contraction of the muscles that caused an inspiratory movement, by the elasticity of the cartilages of the ribs which were twisted during inspiration, and by the elasticity of the abdominal wall which was forced outward by those viscera pushed downward by the diaphragm. An ordinary inspiration is therefore the result of a number of active muscular contractions, while an ordinary expiration is the result of mere passive elasticity of the parts concerned. The average amount of air, in the case of an individual five feet eight inches in height, that goes in and out of the lungs at each inspiration and expiration is about 20 cubic inches; this is called the tidal air. By means of forced inspiratory movements the ingoing tide may be increased by 120 cubic inches; by means of a forced expiration the outgoing tidal air may be increased by 90 cubic inches. After the most forced expiration possible there always remain within the lungs about 90 cubic inches of air. So that if we take as deep a breath as possible, and then make as forced an expiration as we can, we shall drive out $120 + 20 + 90 = 230$ cubic inches of air. This is termed the respiratory capacity.

The ordinary respiratory movements differ in the two sexes and at different periods of life. In young children the chest is altered in size chiefly by the movements of the diaphragm, and the protrusion of the abdominal wall during inspiration is therefore very marked. In men also it is the diaphragm which is chiefly operative, but the ribs are also moved. In women it is the movement of the ribs, especially the upper ones, which is the most extensive. The respiratory rhythm is the relation of the acts of inspiration and expiration to each other as regards time. It may be expressed as follows: In. = 3, Ex. = 4, pause = 3. The number of respirations in a healthy person is about 14 or 18 per minute; it is greater (nearly double) in childhood. It varies according to circumstances, exercise, rest, health, disease, etc.; in disease it may fall as low as 7 or rise to 100 per minute.

Respondent, in law the designation of the party requiring to answer in a suit, particularly in a chancery suit.

Rest, a term applied to various kinds of supports; as, a support for a lance or spear, for the muzzle of a gun in aiming or firing, for the top of the cue in billiards, and for a piece of work in a lathe or vise. In music, an interval of silence occurring in the course of a movement between one sound and another, hence the sign indicating the period of silence. In physics, absolute rest is the permanence of a body's position with respect to ideal fixed points in space; relative rest, that with respect to surrounding bodies.

Restitution Edict, an edict published A. D. 1629 by Ferdinand III., Emperor of Germany, ordering the Protestants to deliver up to the Roman Catholic authorities all ecclesiastical property which had fallen into their hands since the religious peace of Passau established in the previous century. In 1648, at the end of the Thirty Years' War, the edict was revoked.

Restitutionists, a religious sect in New England. They believe that what man lost in the fall is now beginning to be restored, and that everything is to come back to its original form and purity. Their Sabbath, therefore, occurs on Saturday, as the original day of worship; and their meetings are held Friday evening, because it is Sabbath eve.

Restoration, a term used in art to indicate the renewal or repairing of paintings, sculptures, buildings, etc., which have been defaced or partially ruined. It includes the retouching of faded and injured pictures, and the replacing of lost limbs or features of antique statues. But in reference to architecture its meaning is broader; it indicates, first, a representation, by picture or model of a ruined structure restored to its original state; secondly, the rebuilding of dilapidated or fallen portions of an edifice; and thirdly, taking down so-called "debased" work in a composite building, and replacing it by architectural features in harmony with the general style of the edifice.

Restoration, The, in English history a term applied to the accession of King Charles II., in 1660, after the civil war, to the throne of England, after an interregnum of 11 years and four months, from January 30, 1649, (when Charles I. was beheaded) to May 29, 1660. In French history, the first restoration begins May 3, 1814, when Louis XVIII. made his entry into Paris under the protection of foreign bayonets, and ended with the return of Napoleon from Elba, March 20, 1815. The beginning of the second restoration is generally reckoned from the battle of Waterloo, June 18, 1815, and terminated on July 29, 1830, with the abdication of Charles X.

Restorationists, in Church history, the followers of Origen in the opinion that after a certain purgation proportionate to their delinquencies all will be restored to God's favor and to paradise. In the Middle Ages, the Brethren of the Free Spirit held this doctrine; at the time of the Reformation, it was taught by the Anabaptists and in the 18th century, by the Rationalists.

Resumption, the return to specie payment by a government. The Resumption Act of Jan. 14, 1875, fixed Jan. 1, 1879, as the day on which specie payments should be resumed by the United States government. Resumption actually took place on Dec. 17, 1878, when the premium on gold disappeared. In English law, resumption is the taking again by the crown of such lands, tenements, etc., as on false suggestion, or other error, had been granted by letters patent.

Resurrection, an expression denoting the revival of the human body in a future state after it has been consigned to the grave. Traces of this doctrine are found in other religions, in Zoroastrianism, and especially in later Judaism, but the doctrine is peculiarly Christian. In the earlier Hebrew Scriptures there is no mention of it.

It remained for Christ and His apostles to reveal clearly the doctrine of the resurrection of the body, and to connect it with the fact of Christ's own resurrection as its special evidence and pledge.

Reszke, Edouard de, a Polish opera singer; born in Warsaw, Poland, Dec. 23, 1855; a brother of Jean de Reszke. He made his first appearance in Paris, in 1876, taking rank as a leading star with a voice of remarkable range and power. He made several visits to the United States filling the chief roles in grand opera. In professional life, he was almost constantly associated with his brother.

Reszke, Jean de, a Polish opera singer; born in Warsaw, Poland, Jan. 14, 1852. His debut was made in Venice in 1874, under the name of De Reschi, as a baritone. In 1876 and in 1883 he sang at the Theater Francois, Paris; and in the latter year, his voice changed to a tenor of remarkable scope. He has made several tours in America.

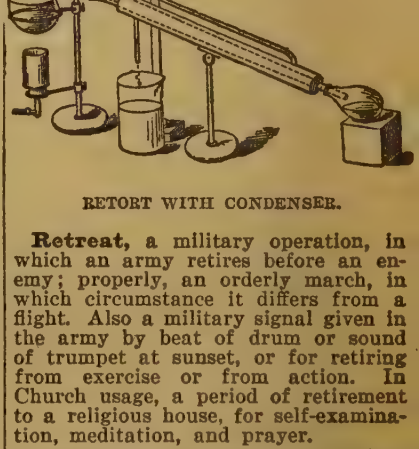
Retainer, a preliminary fee paid to a counsel to secure his services, or rather to prevent the other side from securing them. A special retainer is a fee paid to secure the services of counsel for a particular case. A general retainer is a fee paid to secure a priority of claim on a counsel's services for any cause which the party paying the fee may have for trial.

Retaining Wall, a wall erected to maintain a bank of earth in position, as in sunk fences, faces of earthworks, railway cuttings, sea-walls, etc.; strictly speaking, a wall erected to hold an artificial bank in upright or nearly upright position.

Retention, in law, a lien; the right of withholding a debt or of retaining property till a debt due to the person claiming this right be duly paid.

Retina, the net-like expansion of the optic nerve, lying between the black pigment and the vitreous humor of the eye. It is the only part immediately concerned in the act of sensation.

Retort, a vessel in whose chamber an object is subjected to distillation or decomposition by heat, a neck conducting off the volatile products. The retort of the chemical laboratory is a vessel of glass, platinum, porcelain, or other material. It is bottle-shaped, having a long neck attached, in which the products of the distillation are condensed, and from which they pass into the receiver. The retort of the gas works is a cylinder or segment of a cylinder, formed of clay or iron.



RETORT WITH CONDENSER.

Retreat, a military operation, in which an army retires before an enemy; properly, an orderly march, in which circumstance it differs from a flight. Also a military signal given in the army by beat of drum or sound of trumpet at sunset, or for retiring from exercise or from action. In Church usage, a period of retirement to a religious house, for self-examination, meditation, and prayer.

Retriever, a breed of dog, trained, as the name implies, to find out and bring back any killed or wounded game. The two varieties of retriever differ only in coat; the curly coat should curl closely and firmly all over the body, the wavy coat should fall straight and thick. The retriever makes a very good watch dog, and numberless bad specimens of the breed are to be found fulfilling this vocation only. The pure retriever is gentle in temper and easy to command.

Returning Boards, boards formed to canvass votes cast in an election. They were created in some of the reconstructed States a few years after the close of the Civil War, for the purpose of rectifying fraud or violence that might be practised on the negroes at the polls. In 1868 Arkansas established the first returning board. South Carolina, Louisiana and Florida had similar boards. The various returning boards were successively abolished by the respective State Legislatures.

Reuling, George, an American ophthalmologist; born in Romrod, Germany, Nov. 14, 1839; was surgeon in the Prussian army during the war with Austria; assistant surgeon in the Eye Hospital in Wiesbaden, in 1866–1867; studied in Paris and later in Baltimore and became physician-in-chief of the Eye and Ear Infirmary in Baltimore in 1869. He was Professor of Ophthalmology in the University of Baltimore; Professor of Eye and Ear Surgery in Washington University, Baltimore, Md.; and Professor of Eye and Ear Disease in the Baltimore Medical College after 1886. He was a Fellow of the Heidelberg Ophthalmological and the American Laryngological and Otalogical Societies; eye and ear surgeon at the Maryland General Hospital; the Maryland Home for the Aged, and for the Baltimore and Ohio Railroad. He was the author of many technical papers on, and has invented apparatus for, eye and ear surgery.

Reunion, formerly Bourbon, an island in the Indian Ocean, between Mauritius and Madagascar, 115 miles from each; area, 965 square miles; population, 173,192 — 15,219 being British Indians, 4,496 natives of Madagascar, 9,848 Africans and 836 Chinese. It was annexed by France in 1643, and is an important French colony, now sending a representative to the chamber of deputies, and forming practically almost a department of France. It is very mountainous, the Piton des Neiges reaching a height of 10,069 feet, and the Piton de la Fournaise, an active volcano, of 8,294 feet. The soil produces tropical products, sugar being the principal crop. Coffee, cloves, and vanilla are also grown.

Reuter, Paul Julius, Baron, a German-English news agent, at one time well known from the familiar newspaper heading "Reuter's Telegram"; born in Cassel, July 21, 1821. In Aix-la-Chapelle he formed in 1849 an organization for collecting (partly by pigeon post) and transmitting by telegraph commercial and financial news; and in 1851 he transferred his headquarters to London. As telegraphs extended throughout the world he multiplied the ramifications of his system till it embraced the remotest regions. He even maintained couriers where the telegraphs did not reach — e. g., between Peking and Kiachta. In 1865 Reuter converted his business into a limited liability company, and in 1871 he was made a baron of Germany. In 1872 the Shah of Persia gave him the sole right of making railways, working mines, forests, etc.— a monopoly never made effective, and annulled in 1889, when the concession of the Imperial Bank of Persia was conferred on him. Died Feb. 22, 1899.

Reuterdahl, Henry, an American naval artist; born in Malmo, Sweden, Aug. 12, 1871; received an academic education at Stockholm, Sweden; served as correspondent during the Spanish-American War; contributed to "Harper's," the "Century," "St. Nicholas," "McClure's," the London "Graphic" and other magazines; and in 1902 was engaged in painting a series of pictures of the navies of the world.

Reveille, the signal given in garrisons at break of day, by beat of drum or sound of bugle, for the soldiers to rise and the sentinels to forbear challenging until the retreat is sounded in the evening.

Revelation, the act of revealing, disclosing, or making known that which is secret, private, or unknown; disclosure. Specifically, the act of revealing or communicating divine truth. Also that which is revealed, disclosed, or made known; specifically, the Bible.

Revelation of St. John, the last book of the New Testament, and the only distinctively prophetic one given to fling back the veil which hides futurity from the view. Its writer was John, the servant of God, the "brother" and "companion in tribulation" of the then persecuted Christians, himself an exile in Patmos. It was there he saw the prophetic visions, narrating them after he left the island. The majority of the Fathers and the Church of the Middle Ages considered, as do most modern Christians, that the author was John the Apostle. Respecting the canonicity of this book, Luther, Carlstadt, and Zwingli spoke of it disparagingly, but it is accepted by Churches of the Reformation, as well as by the Roman Church. Three

schemes of interpretation exist: The Preterist, which makes the events predicted now wholly passed; the Futurist, which regards them as future, and that of a third and numerous school, who regard the visions as a historical or continuous prediction of the whole history of the Church from apostolic times to the consummation of all things.

Revenue, the income of a nation derived from taxes, duties, and other sources, for public uses.

Revenue Cutter, a small armed steam vessel, designed for the prevention of smuggling; so called from the fact that originally the vessel was of the cutter-yacht type. The United States Revenue Cutter Service is a branch of the Treasury Department and its purpose is, principally, to enforce the customs revenue laws. Its immediate supervision resides in a bureau of the department known as the Division of Revenue Cutter Service, which is in charge of a chief and a number of assistants.

Reverberatory Furnace, a furnace in which ore, metal, or other material is exposed to the action of flame, but not to the contact of burning fuel. The flame passes over a bridge and then downward on the material, which is spread on the hearth. The reverberatory furnace for copper has a furnace chamber, hearth, two tuyeres, and two cisterns, into which the molten results of the process are discharged.

Revere, Joseph Warren, an American military officer; born in Boston, Mass., May 17, 1812; was appointed a midshipman in the navy in 1828; lieutenant in 1841; took part in the Mexican War; and resigned from the navy in 1850. He served in the Civil War as colonel of the 7th New Jersey Volunteers and afterward as Brigadier-General. He had command of a brigade at Fredericksburg; was transferred to the command of the famous "Excelsior Brigade," with which he fought at Chancellorsville. He was censured by his superior officer after the engagement at Chancellorsville; was tried by court-martial, and was dismissed from the service in 1863; but his dismissal was revoked by President Lincoln, and his resignation accepted. He wrote "Keel and Saddle," in which he relates many of his personal adventures. He died in Hoboken, N. J., April 20, 1880.

Revere, Paul, an American patriot, famous for his midnight ride from Boston to Lexington; born in Boston, Mass., Jan. 1, 1735. He was the son of a goldsmith from Guernsey, whose trade he followed after serving as a lieutenant of artillery in the expedition against Crown Point (1756). He also engaged in copperplate printing, and before the Revolution constructed a gunpowder mill. A keen patriot, he was one of the party that destroyed the tea in Boston harbor, and he was at the head of a volunteer committee, consisting of 30 young mechanics, who formed a secret society to watch the British. When it was known that the latter intended to move, Revere crossed over to Charlestown, and April 18, 1775, the night before Lexington and Concord, at a signal rode on to Lexington and to Lincoln, rousing the minute-men as he went; at Lincoln he was stopped, but a companion succeeded in reaching Concord. His ride is the subject of a well-known poem by Longfellow. During the war he rose to lieutenant-colonel of artillery; afterward he returned to his goldsmith's work, and in 1801 founded the Revere Copper Company at Canton, Mass. He died in Boston, May 10, 1818.

Reverend, worthy or deserving of reverence; entitled to reverence or respect; enforcing reverence by the appearance (applied to persons and things). Also a title of respect given to clergymen and ecclesiastics. All ministers of religion in the United States, Great Britain, and the British colonies are given this title.

Reversion, in law, the returning of an estate to the grantor or his heirs after a particular estate is ended. An estate in reversion is the residue of an estate left in the grantor, to commence in possession after the determination of some particular estate granted out by him. The term is sometimes improperly extended to any future estate in reversion or remainder. Reversion of series, in mathematics, when one quantity is

xpressed in terms of another, by ieans of a series, the operation of nding the value of the second in erms of the first, by means of a eries, is called the reversion of the eries.

Review, a critical notice or examination of a new publication; a criticism; a critique. Hence a name given to certain periodical publications containing a collection of critical essays on subjects of public interest, literary, scientific, political, moral, or theological, together with critical examinations of new publications.

In law, the revision of any interlocutor, decree, or sentence, against which a person has reclaimed or appealed; the power which a superior court has of reviewing the judgment of an inferior court.

Revised Version, a revised edition of the Authorized Version of the Bible. A better text was constructed, manuscripts being used which had been discovered since the Authorized Version had been made. Revision, not retranslation, was aimed at, as few alterations as possible being introduced, and these only if adopted by the votes of two-thirds of the translators. The New Testament was published in May, 1881, the Old in May, 1885. Each had an immediate and large sale, but the Authorized Version still holds its place in most evangelical churches.

Revival, the act of reviving; the state of being revived; most commonly used in a religious sense. Revivals occurs in all religions. When one takes place a large number of persons who have been comparatively dead or indifferent to spiritual considerations, simultaneously or in quick succession become alive to their importance, alter spiritually and morally, and act with exceeding zeal in converting others to their views. A Mohammedan revival takes the form of a return to the strict doctrines of the Koran, and a desire to propagate them by the sword. A Christian minority dying in the place is in danger of being massacred by the revivalists.

Revival of Letters, the revival of literature after the apparent death-blow which it received when the barbarous nations of the North destroyed the civilized Roman empire. It commenced in England feebly at the beginning of the 11th century, and became more potent in the 14th, 15th and subsequent centuries.

Revocation, in law, the destroying or annulling of a deed or will which had existence till the act of revocation made it void. The revocation of a deed can only be effected when an express stipulation has been made in the deed itself reserving this power. The revocation of a will can be made in four different ways: (1) by another will; (2) by intentional burning, or the like; (3) by the disposition of the property by the testator in his lifetime; (4) by marriage.

Revoil, Benedict Henri, a French novelist and dramatist; born in Aix, Bouches-du-Rhone, France, Dec. 16, 1816. He lived in the United States for nine years, during which time he collected the material for many of his works. They include: "Hunting and Fishing of the Other World" (1856); "The Daughter of the Comanches" and "Dramas from the New World" (1864–1865), and a number of plays which he put on the stage in the United States, and afterward published in France.

Revolution, a fundamental change in government, or in the political constitution of a country, effected suddenly and violently, and mainly brought about by internal causes; a revolt against the constituted authority successfully and completely accomplished. In the United States the term Revolution is applied specifically to the American War for Independence, which began in 1775 with the irregular running fight popularly known as the battle of Lexington, and practically ended with the surrender of Lord Cornwallis, at Yorktown, Va., to the combined forces of the French and Americans, in the year 1781. By this war the colonies succeeded in casting off the English authority and in erecting the government of the United States. By the English Revolution is generally meant that revolution in England by which James II. was driven from the throne in 1688, but it is sometimes applied to the overthrow of the monarchy by Cromwell.

Revolutionary Tribunal, in French history, the name given on Oct. 30, 1793, to what had before been called the Extraordinary Tribunal. It sent many victims to the guillotine.

Revolver, a description of firearm in which a number of charges contained in a revolving cylinder are, by pulling the trigger, brought successively into position and fired through a single barrel. For the introduction of the revolver in its present form we are indebted to Col. Samuel Colt, of Hartford, Conn., though repeating pistols had long been known in other countries. These were made from one mass of metal bored into the requisite number of barrels, but were so clumsy as to be of very little use. In the Colt revolver there is a revolving cylinder containing six chambers placed at the base of the barrel, each chamber having at its rear end a nipple for a cap. These contain the cartridges, which are put in from the front of the breechpiece and driven home by a lever ramrod placed in a socket beneath the barrel. The revolver is fired through the single barrel, the cylinder being turned by mechanism conected with the lock, till each chamber in succession is brought round so as to form virtually a continuation of the barrel. Various modifications of Colt's revolver have been introduced, with the view in some cases of increasing the rapidity and facility of firing, in others of diminishing by safeguards the risks to which inexperienced hands must ever be exposed in the use of these weapons. As a military weapon the revolver will it is thought, be superseded by a repeating pistol with mechanism similar to that of magazine rifles. The revolver principle has also been applied to rifles, and to guns for throwing small projectiles, as in the Gatling and other machine guns.

Rexford, Eben Eugene, an American poet: born in Johnsburg, N. Y., July 10, 1848. He began to write when a mere child, contributing to periodicals and magazines. He published in book form the poems "Brother and Lover" and "Grandmother's Garden." He wrote the popular songs "Silver Threads Among the Gold" and "Only a Pansy-Blossom."

Reyburn, Robert, a Scotch-American physician; born in Glasgow, Scotland, Aug. 1, 1833; was graduated at the Philadelphia College of Medicine in 1856 and practised his profession in that city till 1862, when he entered the United States army as an acting assistant surgeon; later became surgeon and brevet lieutenant-colonel U. S. V., and assistant surgeon U. S. A. in 1867; and afterward practised in Washington. He was one of the surgeons in attendance on President Garfield; and was Professor of Physiology and Hygiene in the Medical Department of Howard University. He was a member of many scientific societies, author of "Clinical History of the Case of President Garfield"; and a contributor to medical journals.

Reynolds, Dudley Sharpe, an American physician; born in Bowling Green, Ky., Aug. 31, 1842; was graduated at the Medical Department of the University of Louisville, in 1868; and became Professor of Ophthalmology, Otology, and Medical Jurisprudence in the Hospital College of Medicine, Louisville, in 1874.

Reynolds, Edwin, an American inventor; born in Mansfield, Conn., March 23, 1831; entered a machine shop as apprentice in 1847, and became superintendent of the Corliss Steam Engine Company, at Providence, R. I., in 1861; later removed to Milwaukee, Wis. He was the inventor of the Reynolds-Corliss engine; introduced the first triple-expansion engine.

Reynolds, Elmer Robert, an American enthnologist; born in Danville, N. Y., July 30, 1846; was educated at the Columbian University; served through the Civil War in 1877 became an examiner of pensions in the United States Civil Service. He was engaged in exploring for aboriginal antiquities in Maryland and Virginia.

Reynolds, John Fulton, an American military officer; born in Lancaster, Pa., Sept. 20, 1820; was graduated at the United States Military Academy in 1841; served in the Mexican War; was appointed commandant at West Point in 1859; served through the Civil War in active service; in 1863 was promoted

Major-General of volunteers. His corps was the vanguard at Gettysburg, where he was killed, July 1, 1863.

Reynolds, Joseph Jones, an American military officer; born in Flemingsburg, Ky., Jan. 4, 1822; was appointed to the United States Military Academy from Indiana in 1839; on graduation was appointed 2d lieutenant, 4th Artillery, and after service at Fort Monroe and in Texas, was on frontier duty at Fort Washita, I. T., in 1855–1856; was stationed at various colleges. After the beginning of the Civil War he rapidly rose in rank from colonel to Major-General; was brevetted Brigadier-General in 1867 for gallant and meritorious service, and was in the same year brevetted Major-General; was transferred to the 23d Cavalry in 1870, and after that time served at Fort McPherson and other military stations till retired from active service June 25, 1877, for disability contracted in the line of duty. He died in Washington, D. C., Feb. 25, 1899.

Reynolds, Joseph Smith, an American lawyer; born in New Lenox, Ill., Dec. 8, 1820; was graduated at the University of Chicago in 1866; served through the Civil War, participating in many battles. After the war was admitted to the bar; was a member of the Illinois Legislature in 1866–1870; one of the founders of the Chicago park system; State Senator in 1872–1874; commissioner to establish a State School for Feeble-Minded Children in 1875; senior vice-commander-in-chief of the G. A. R. 1875–1876; commander of the Illinois Department of the G. A. R. in 1877; and first vice-president of the Society of the Army of the Tennessee in 1877.

Reynolds, Sir Joshua, an English portrait and subject painter; born in Plympton Earls, near Plymouth, July 16, 1723. His father intended him for the medical profession; but he developed a strong aptitude for painting, and at the age of eight had mastered the "Jesuit's Perspective," and applied its principles to drawings executed by himself. In October, 1740, he was sent to London to study art. In 1743 he returned to Devonshire, and some of the portraits of local worthies which he then produced still exist. In the following year he was again in London pursuing his art; but in the beginning of 1747, he settled in Plymouth Dock. In 1749 he made the acquaintance of Commodore Keppel, who invited him to accompany him on a cruise in the Mediterranean; and, after painting many of the British officers in Minorca, he made his way to Rome, where he studied Raphael and Michael Angelo. He also visited Bologna, Genoa, Florence, Parma, and Venice. Returning to England in October, 1752, he established himself in a studio in London, and attracted notice by his portraits of the second Duke of Devonshire and Commodore Keppel. Before long he was in excellent practice, and in the year 1755 he had no fewer than 120 sitters. In 1764 he founded the famous literary club of which Dr. Johnson, Garrick, Burke, Goldsmith, Boswell, and Sheridan were members; all of whom were portrayed by his brush. He was one of the earliest members of the Incorporated Society of Artists, and contributed to its exhibitions till 1768, when, on the establishment of the Royal Academy, he was elected its first president. He contributed his picture of Miss Morris as "Hope Nursing Love" to the first exhibition of the Royal Academy. In 1771 he completed his subject "Count Ugolino and his Children in the Dungeon." In 1784 he succeeded Allan Ramsay as painter to the king; in July, 1789, his sight became affected and he ceased to paint; gradually his strength sank, and he peacefully expired on Feb. 23, 1792.

Reynolds, William, an American naval officer; born in Lancaster, Pa., Dec. 18, 1815; entered the navy in 1831; was commissioned lieutenant in 1841 and owing to broken health was retired in 1851. He was later sent to Hawaii, where he negotiated a reciprocity treaty. When the Civil War began he returned to active duty; was placed in command of the naval forces on the Asiatic Station in 1862; was promoted captain in 1866 and rear-admiral in December, 1873, and was retired on account of ill health in December, 1877. He died in Washington, D. C., Nov. 5, 1879.

Reze, Frederick, an American clergyman; born in Hildesheim, Germany, in 1797; fought in the battle

of Waterloo; and soon afterward was ordained in the Roman Catholic Church and sent to Africa; and later came to the United States; returned to Germany in 1827 and sent many missionaries to the United States; again returned to the United States in 1828 and labored among the Indians of Ohio and Michigan. In 1833 he was sent to Detroit, Mich., and was consecrated the first bishop of Michigan and Wisconsin. He resigned his see in 1837, and returned to Rome, where he lived for several years. He died in Hildesheim, Germany, Dec. 27, 1871.

Rhamnaceæ, an order of plants. There are species in nearly all countries, with the exception of the Arctic zone. Berries belonging to various plants of the order have been used for dyeing yellow, green, or intermediate tints, others are eatable. One plant is used by the poorer classes in China for tea.

Rhapsodist, strictly, one who strings songs together, but usually applied to a class of persons in ancient Greece, who earned their living by reciting the poems of Homer. It is believed that to these persons we are chiefly indebted for the preservation of the Homeric poems.

Rhatany, or **Rhattany,** half-shrubby plant, a native of the cold sterile table-lands of the Andes in Peru and Bolivia. It is valued for the medicinal properties of the root, which are shared more or less by other species of the same genus, also natives of South America.

Rhea, in Greek mythology, the daughter of Cœlus and Terra, or Heaven and Earth; the wife of Saturn, and mother of Jupiter, Juno, Ceres, Vesta, and several other deities.

Rhea, in ornithology, a genus of Struthionidæ. They are sometimes called South American ostriches, but are smaller than the true ostrich, and the whole plumage is somber, ranging from Bolivia, Paraguay, and the S. of Brazil down to Magellan's Straits.

Rhea, a variety of the nettle family, which grows luxuriantly in India. From the delicate fibers in its bark the finest and strongest textile fabrics can be produced. They can be worked into every variety of fabric, from velvets to laces. It is specially suitable, from its lightness and toughness, for tents and ship canvas, and it is found to be far more durable than linen.

Rhea, Mademoiselle (Mlle. Hortense Barbe-Loret), a Belgian actress; born in Brussels, Belgium, Sept. 4, 1844. Educated at the Ursuline Convent, Paris, France; she began to study for the stage soon after leaving school; was leading actress at the Imperial Theater, St. Petersburg, 1876–1881; acted in the United States in 1881 and 1882. She died in Montmorency, France, May 5, 1899.

Rhead, Louis John, an American artist; born in Etruria, England, in 1860; was educated at the Art Training School, South Kensington, London; and came to the United States in 1883. He was a painter in both oil and water-colors, and illustrated many books.

Rhees, Rush, an American educator; born in Chicago, Ill., Feb. 8, 1860; was graduated at Amherst College in 1883, and at the Hartford Theological Seminary. In 1889 he accepted a pastorate at Portsmouth, N. H., where he remained till 1892, when he went to the Newton Theological Institution, Newton Center, Mass., and in 1894 became Professor of Biblical Interpretation of the New Testament. He was elected president of the University of Rochester, Rochester, N. Y., July 1, 1900.

Rhees, William Jones, an American bibliographer; born in Philadelphia, Pa., March 13, 1830; has been chief clerk of the Smithsonian Institution and had charge of its publications since 1852. He was one of the founders of the Sons of the American Revolution.

Rheims, or **Reims,** a city in the French department of Marne; on the Vesle; 100 miles E. N. E. of Paris. It is well built, and from the prevalence of the older style of domestic architecture, has a picturesque appearance. Under the Frank rule it was a place of much importance, and it acquired a deeply religious interest from its having been the scene in 496 of the baptism of Clovis and his chief officers by the bishop, St. Remy (438–533). In the 8th century it became an archbishopric, and from 1179, when Philip Augustus was solemnly crown-

ed here, it became the place for the coronation of the kings of France. Joan of Arc brought the dauphin hither, and the only sovereigns in the long series, down to 1825, not crowned at Rheims were Henry IV., Napoleon I., and Louis XVIII. In 1830 the ceremony of coronation at Rheims was abolished. The cathedral, though the towers of the original design are still unfinished, is one of the finest extant specimens of Gothic architecture. It was built between 1212 and 1430. The Romanesque church of St. Remy (mainly 1160–1180), with the saint's shrine, is nearly of equal size, but of less architectural pretension. Rheims is one of the principal entrepots for the wines of Champagne, and the hills which surround the town are planted with vineyards. Pop. 107,963.

Rhesus, a genus of monkeys from India, in some parts of which it is considered sacred.

Rhetoric, in its broadest sense, the theory and practice of eloquence, whether spoken or written.

Rhett, Robert Barnwell, an American lawyer; born in Beaufort, S. C., Dec. 24, 1800; after practising as an attorney for several years in South Carolina he was elected attorney-general of the State in 1833; was one of the leaders in the Nullification movement, and was elected United States Senator. He was a member of the State Convention which passed the secession ordinance. He was conspicuous during the organization of the Confederate government, and as a member of its Congress was particularly active. He did not participate in public affairs after the Civil War, and died in St. James' Parish, La., Sept. 14, 1876.

Rhett, Thomas Grimke, an American military officer; born in South Carolina about 1825; was graduated at the United States Military Academy and assigned to the Ordnance Corps in 1845, and served at the Washington arsenal till 1846, when he was transferred to the Mounted Rifles, and sent to Mexico. He served in the Mexican War; became captain in 1853. He resigned his commission in 1861, and sought high office in the Provisional Confederate army, but not receiving it he returned to South Carolina, where he was commissioned a Major-General by the governor. He was chief of staff to Gen. Joseph E. Johnston, till 1862, when he was ordered to the Trans-Mississippi Department. After the war he was colonel of ordnance in the Egyptian army in 1870–1873, when he resigned owing to ill health. He died in Baltimore, Md., July 28, 1878.

Rheum, rhubarb; used in the United States in the making of pies, and is often called pie plant.

In pharmacy, three leading kinds of rhubard are recognized: The Turkey or Russian rhubarb, the East Indian, and the Batavian rhubarb. An extract, an infusion, a syrup, a tincture, and a wine of rhubarb, with a compound rhubarb pill, are used in pharmacy.

Rheumatism, a term which has been and still is, rather vaguely and extensively used in the nomenclature of disease. The usual exciting cause of acute rheumatism is exposure to cold, and especially to cold combined with moisture. Men are more subject to the disease than women. The predisposition is affected by age; children under 10 years being comparatively seldom attacked, while the disease is most prevalent between the ages of 15 and 40. Above this age a first attack is rare, and even recurrences are less frequent than earlier in life. Persons once affected become more liable to the complaint than they previously were. Chronic painful affections of the joints, called chronic rheumatism, sometimes follow rheumatic fever and are a consequence of it. It is more common in women than in men; most often begins at or after middle life, though occasionally even in childhood; and is apt to affect those who are weakly and who have had a life of hard work with defective nourishment. There is no special liability to affection of the heart as in true rheumatism. Muscular rheumatism is the name usually given to painful affections of the muscles for which no clear cause is discoverable. Rheumatic diseases of animals are less common than the corresponding affections of men. Horses are not very liable to acute rheumatism, but suffer from a chronic variety. In cattle and sheep rheumatic disorders are more common and acute than in horses. Among

dogs rheumatism is known under the name of kennel lameness, and is very troublesome and intractable in low, damp, cold situations.

Rhine (German Rhein), the finest river of Germany, and one of the most important rivers of Europe, its direct course being 460 miles and its indirect course 800 miles (about 250 miles of its course being in Switzerland, 450 in Germany, and 100 in Holland); while the area of its basin is 75,000 square miles. It is formed in the Swiss canton Grisons by two main streams called the Vorder and Hinter Rhein. The Vorder Rhein rises in the Lake of Toma, on the S. E. slope of the St. Gothard, at a height of 7,690 feet above the sea, near the source of the Rhone, and at Reichenau unites with the Hinter Rhein, which issues from the Rheinwald Glacier, 7,270 feet above sea-level. Beyond Reichenau the united streams take the common name of Rhine. Generally speaking, it pursues a N. course till it enters Holland, below Emmerich, when it divides into a number of separate branches, forming a great delta, and falling into the sea by many mouths. That which retains the name of Rhine, a small stream, passes Leyden and enters the North Sea. In the German part of its course the chief tributaries are the Ill, Nahe, Moselle, Ahr, and Erft, Neckar, Main, Lahn, Sieg, Ruhr, and Lippe. In Switzerland its tributaries are short and unimportant, and this part of its course is marked by the Falls of the Rhine at Schaffhausen, where the river is precipitated in three leaps over a ledge of rocks 48 to 60 feet in height, and by the cataracts of Lauterberg and the rapids of Rheinfelden. It is navigable without interruption from Basel to its mouth, a distance of 550 miles. Large sums are spent every year in keeping the channel in order, and in the erection or repair of river harbors, both in Germany and Holland. The Rhine is distinguished by the beauty of its scenery, which attracts many tourists.

Rhine Wines, a general term for wines made from the grapes grown on the borders of the Rhine.

Rhinoceros, the sole recent genus of the family Rhinocerotidæ. It falls naturally into three sections:

(a) Rhinoceros.—There are two well-marked species: Rhinoceros unicornis, with a single horn, and well marked folds in the skin; R. sondaicus, the Javan rhinoceros, is smaller and distinguished by the different arrangement of the folds of the skin, and by the small size or absence of the

RHINOCEROS BICORNIS.

horn in the female. Found near Calcutta, in Burma, Malay Peninsula, Java, Sumatra, and probably Borneo.

(b) Ceratorhinus.—The folds are not so strongly marked as in the first section. There is a well-developed nasal, and a small frontal horn, separated by an interval. Geographical range nearly the same as that of the Javan rhinoceros, but it does extend into Bengal.

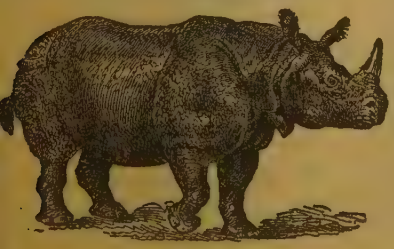
(c) Atelodus, with two well-marked species, peculiar to Africa. Incisors rudimentary or wanting, well-developed anterior and posterior horns in close contact; skin without definite permanent folds. R. bicornis, the common two-horned rhinoceros, is the smaller, and has a pointed prehensile lip. It ranges from Abyssinia to Cape Colony, but the progress of civilization and the attacks of sportsmen are rapidly reducing its numbers. Two varieties are said to exist, the square-mouthed, or white rhinoceros, has a square truncated lip, browses on grasses and frequents open country. It is the largest of the family, an adult male standing over six feet at the shoulder.

Any individual of the genus rhinoceros. The rhinoceros is the largest and most powerful terrestrial mammal, except the elephant, to which, as well as to the hippopotamus and tapir, it is allied. They are of low intelligence, and usually harmless, but when

provoked they display considerable ferocity, and, though apparently so clumsily formed, can run with great speed.

Rhinodon, in ichthyology, the sole genus of the family Rhinodontidæ, a gigantic shark, known to exceed 50 feet in length, and said to attain 70. Common in the W. parts of the Indian Ocean. It is harmless, the teeth being small and numerous.

Rhoades, Mosheim, an American clergyman; born in Williamsburg, Pa., April 14, 1837; was graduated at the Theological Department of Susquehanna University, Selinsgrove, Pa., in 1861, and entered the ministry of the English Lutheran Church the same year. He held charges in Pennsylvania till 1869, and in St. Louis, Mo., after 1871. He was president of the General Synod of the Evangelical Lutheran Church in 1885–1886.



RHINOCEROS INDICUS.

Rhoades, Samuel Nicholson, an American naturalist; born in Philadelphia, Pa., April 30, 1862; took a special course in journalism in Harvard University; and later studied at the Academy of Natural Sciences and Museum of Science and Art, in Philadelphia, and at Carnegie Museum, Pittsburg; and after 1893 traveled as a collector of museum specimens of natural history.

Rhodanthe, in botany, a genus of Helychrysæ; only known species R. manglesii, a beautiful composite; its flowers, of the dry and unfading kind, roseate or purple on the upper part, and silvery below. It is found in Western Australia, has been introduced into European and American greenhouses, and will grow also in the open air in a temperature between 60° and 80°. There are several varieties.

Rhode Island, a State in the North Atlantic Division of the North American Union; one of the original 13 States; capital, Providence; number of counties, 5; area, 1,053 square miles; pop. (1900) 428,556.

The State is divided into two unequal parts by Narragansett Bay, which extends inland about 30 miles. The surface of the W. portion or mainland is hilly, but the hills are all low; the greatest height, Woonsocket Hill, having an altitude of 570 feet. There are numerous salt marshes along the ocean. The E. part consists mainly of islands. Of these the largest and most important is Rhode Island from which the State derives its name. The principal rivers are the Pawtucket, navigable as far as Pawtucket, where it changes its name to Blackstone, the Pawcatuck, forming part of the boundary between Rhode Island and Connecticut, and the Pawtuxet, flowing across the central part of the State, and emptying into the Providence river, an arm of the Narragansett Bay. There are numerous coves and bays branching off from Narragansett; among them being Greenwich Bay, Saxonnet river, Mount Hope Bay, and Providence river. Block Island, 10 miles from the coast, belongs to the State.

The mineral resources of the State are not very extensive, though considerable anthracite coal, excellent for smelting purposes, and much magnetic iron have been mined at times. There are about 20 large granite quarries in the State; those at Westerly being noted for their value in monumental work.

In common with New England States, Rhode Island is noted for its manufacturing interests. There were reported by the United States census in 1900, 4,189 manufacturing establishments, employing $183,784,587 capital, and 96,528 persons; paying $41,114,084 in wages and $96,392,720 for raw materials; and having an annual output valued at $184,074,378.

On Oct. 31, 1901, there were reported 38 National banks in operation, having $13,105,250 in capital, $6,317,750 in outstanding circulation, and $4,503,000 in United States bonds.

There were also 4 State banks, with $495,000 capital and $1,394,546 resources; 9 loan and trust companies, with $3,670,498 capital, and $3,013,391 surplus; and 25 mutual savings banks, with $72,330,141 in deposits.

At the end of the school year 1899–1900 the children of school age numbered 102,250; the enrollment in public schools, 64,537; and average daily attendance, 46,087. There were 534 buildings used for public school purposes, public school property valued at $5,175,045, and 1,913 teachers. For higher education there were 17 public high schools; 11 private secondary schools, the Rhode Island Normal School, and Brown University, at Providence, which is the principal educational institution in the State.

The strongest denominations in the State are the Roman Catholic; Regular Baptist, Protestant Episcopal; Congregational; Methodist Episcopal; Free Will Baptist; Unitarian, and African Methodist.

The total funded debt of the State, Jan. 1, 1902, was $2,978,000; sinking funds, $389,436.61; net debt, $2,588,563.39. The sinking fund is largely invested in city, town, and district bonds and notes, and is to receive $32,000 yearly. The assessed valuation of real estate in 1900 was $320,318,384; personal property, $87,086,388; total, $407,404,772; tax rate, $1.80 per $1,000.

The governor is elected for a term of one year and receives a salary of $3,000 per annum. Legislative sessions are held annually, beginning on the first Tuesday in January and are limited to 60 session days. The Legislature has 38 members in the Senate, and 72 members in the House, each of whom receives $5.00 per day and mileage. There are 2 Representatives in Congress.

It is claimed that the Northmen visited this region about A. D. 1000, and certain antiquities have been ascribed to them. The first English settlement was made at Providence in 1636, by Roger Williams, whose religious opinions had caused his expulsion from Massachusetts. The charter granted by Charles II. to the colony was so liberal in its provision that it remained the fundamental law of the State till 1842. Rhode Island was firm in opposition to the King Philip War. King Philip himself was killed in what is now the town of Bristol. The great "swamp fight" occurred in 1675, in the Narragansett country, where more than 1,000 Indians were killed. The charter was temporarily suspended from 1686 to 1687. A new constitution was adopted in 1842, this going into effect in 1843. Rhode Island was the last of the States to ratify the Federal Constitution in 1790, and until a recent period foreign born citizens could not vote unless they owned real estate.

Rhodes, an island in the Mediterranean, appertaining to Asiatic Turkey, near the coast of Asia Minor; is 40 miles long, with a breadth of 18 miles at its widest point; area, 570 square miles; pop. about 30,000.

Rhodes, the capital of the island of Rhodes, situated at its N. E. extremity. It is defended by towers about 800 feet distant from each other, while in the center of the mole there is a square bastion 120 feet high. It was at the entrance to the harbor of this city that stood the celebrated Colossus of Rhodes. Pop. about 10,000. The ancient Rhodes was taken possession of by a branch of the Doric race, who held it at the time of the Trojan war, 1184 B. C. It was of small political importance among the states of Greece till the city of Rhodes was built and made the capital of the island, 408 B. C. It was taken by Chosroes II., King of Persia, in 616; by the Saracens in 651; and by the Knights of St. John, Aug. 15, 1309. Mohammed II. besieged it ineffectually in 1480, and the Sultan Solyman I. compelled it to capitulate after a vigorous siege that lasted from June to December, 1522.

Rhodes, Cecil John, a South African statesman; born July 5, 1853. He was the fourth son of the vicar of Bishop Stortford, Hertfordshire, England; was sent for his health to Natal, where his brother was a planter. He subsequently went to the Kimberley diamond diggings; there he soon became conspicuous and amassed a fortune. He went back to England, and entered at Oriel College, Oxford, and though his residence was cut short by ill-health, he ultimately took his degree. He entered the Cape House of Assembly as member for Barkly

In 1884 General Gordon asked him to go with him to Khartum as secretary; but Rhodes had just taken office in the Cape ministry, and decided to remain in South Africa. He sent $50,000 to Mr. Parnell to forward the cause of Irish Home Rule. In 1890 he became prime minister of Cape Colony. His policy may be described as the ultimate establishment of a federal South African dominion under the British flag. He was an earnest advocate of the construction of a railroad "from Cairo to the Cape." He died in Cape Town, South Africa, March 26, 1902. In his will Mr. Rhodes left about $10,000,000 to found a number of three-year scholarships tenable at Oxford, England. The income for each scholarship was $1,500 a year, and two were offered to every State and Territory in the American Union, to every English speaking colony; while five were set apart for students of German descent.

Rhodesia, the name given to that part of South Africa which has been occupied of recent years by the British South African Company, acting mainly under Cecil John Rhodes. Area, 750,000 square miles; pop. 1,075,000. The whole territory is administered by the British South African Company, which was given a royal charter in October, 1889. The river Zambesi flows through it, cutting the region into two portions — Southern and Northern Rhodesia.

Southern Rhodesia consists of the two provinces of Matabeleland and Mashonaland. The capital and the seat of government of Rhodesia, is Salisbury, with a population of 1,800. The other principal townships are New Umtali, Melsetter, and Enkeldoorn. A railway is being built, running inland from Beira and it will place Salisbury in direct communication with the sea over a line 382 miles in length. Matabeleland lies between the Limpopo and middle Zambesi rivers. The principal town, and the chief commercial center in Rhodesia, is Bulawayo, with a population of 5,000. The extension of the Cape government W. railway system through Kimberley and Vryburg to Bulawayo was completed in October, 1897. The distance from Cape Town to Bulawayo is 1,360 miles.

Northern Rhodesia consists of the whole of the British sphere N. of the Zambesi, lying between Portuguese East Africa, German East Africa, the Kongo Free State, and Angola, with the exception of the strip of territory forming the British Central Africa Protectorate, which is under direct imperial administration. N. of the Zambesi the country has as yet been little prospected. Coal has been found on the shore of Lake Nyassa. There are 5,250 square miles of gold fields in Rhodesia.

Rhodium, one of the rare metals found in platinum ores. It is very hard, white, and brittle, and, with the exception of iridium, one of the most infusible of metals.

Rhododendron, a genus of trees and shrubs of the natural order Ericeæ. The buds in this and nearly allied genera, as azalea are scaly and conical. The species are numerous;

RHODODENDRON.

they have evergreen leaves, and many of them are of great beauty both in foliage and in flowers. A few small species are natives of continental Europe and of Siberia; but the greater number belong to the temperate parts of North America, and to the mountains of India.

Rhomb, or Rhombus, in geometry, an oblique parallelogram whose sides are all equal. The diagonals of a rhombus bisect each other at right angles. The area of a rhombus is equal to half the product of its diagonals.

Rhone (Latin, Rhodanus), a river in Europe which rises in Switzerland, near the E. frontiers of the canton of Valais, about 18 miles W. S. W. of the source of the Vorder-Rhein. Its precise origin is the Rhone Glacier, 5,581 feet above the level of the sea. It passes through the Lake of Geneva, and enters France, flowing first S. and then W. to the city of Lyons, where it turns almost due S., and so continues till it falls into the Gulf of Lyons by a greater and smaller mouth, forming here an extensive delta. Its principal affluent is the Saone, which enters it at the city of Lyons; other large tributaries are the Isere and Durance. Its whole course is about 500 miles; its drainage area is 38,000 miles; and it is navigable for 360 miles.

Rhus, in botany, a genus of Anacardiaceæ. Most are shrubs, from 6 to 10 feet high, and exist in all the continents. The leaves of the hide or elm-leaved sumach of the S. of Europe, are used for tanning morocco leather. Exudations from incisions in the bark of R. succedanea and R. varnicifera yield the varnish used in Japanese and Chinese wickerwork. Two of the American species are poisonous, nor is any of the genus very safe. These two species are called indifferently poison oak, poison ivy, poison sumac, and more rarely mercury.

Rhyme, more correctly Rime, in poetry, a correspondence in sound of the terminating word or syllable of one line of poetry with the terminating word or syllable of another. To constitute this correspondence in single words or in syllables it is necessary that the vowel and the final consonantal sound (if any) should be the same, or have nearly the same sound, the initial consonants being different.

Rhythm, in general a measured succession of divisions or intervals in written composition, music, or dancing. The rhythm of poetry is the regular succession of accent, emphasis, or voice stress; or a certain succession of long and short syllables in a verse. Prose also has its rhythm, and the only difference between verse and prose is, that the former consists of a regular succession of similar cadences, divided by grammatical pauses and emphases into proportional clauses, so as to present sensible responses to the ear at regular proportioned distances. In music, rhythm is the disposition of the notes of a composition in respect of time and measure; the measured beat which marks the character and expression of the music.

Riall, Sir Phineas, a British military officer; born in England about 1769; entered the army as ensign in 1794 and rose to the rank of major. He was in command of a brigade in the West Indies in 1808–1810; became colonel in 1810 and Major-General in 1813; and later was ordered to Canada to take part in the war between Great Britain and the United States. He was chief in command at the battles of Chippewa and Lundy's Lane. He was appointed governor of the Island of Grenada in 1816; was promoted Lieutenant-General in 1825 and full General in 1841; and was knighted in 1833. He died in Paris, France, Nov. 10, 1851.

Rib, in anatomy, one of the long curved bones which form the walls of the chest. They extend in an oblique direction from the vertebræ of the back to the sternum in front. There are usually 12 on each side; but in some rare cases 13 have been found, in others only 11. The use of the ribs is to cover and defend the lungs and heart; and their articulations with the vertebræ and sternum admitting of a slight motion, they assist in respiration.

Ribbon, Riband, or **Ribband,** a narrow woven fabric commonly of silk, used for trimming some part of woman's attire; also for badges and other decorative purposes.

Ribbon Fish, known also as the oar-fish.

Ribbon Grass, a species of canary grass with variegated leaves.

Ribes, in botany, a genus of the order Grossulariaceæ. Some of the species are remarkable for their agreeable and wholesome acid fruits, and are, on this account, much cultivated in our gardens. R. grossularia is the source of numerous varieties of gooseberries. R. rubrum yields both red and white currants, and R. negrum black currants.

Ribot, Alexandre Felix Joseph, a French statesman; born in St.

Omer, France, Feb. 7, 1842. He studied law in Paris, and in that city became prominent in legal and municipal affairs; in 1870, was secretary of the Bar Society; was appointed director of pardons and of criminal matters in 1875; becoming Minister of the Interior and president of the cabinet, January to March, 1893. When Faure became president, in January, 1895, M. Ribot again filled the post of premier, and held the office till October of the same year.

Ricardo, David, an English political economist; born in London, England, April 19, 1772. He stands next to Adam Smith in the British free-trade school of political science, and his writings have exerted a vast influence on all theories of political economy. After making his fortune in the Stock Exchange in London, he retired to devote himself to the study of mathematics, chemistry, etc. He died in Gatcomb Park, Gloucestershire, Sept. 11, 1823.

Ricciarelli, Daniele, better known by the name of Daniele da Volterra, an Italian painter; born in Volterra, Italy, in 1509. His fame rests chiefly on a series of frescoes in the church of La Trinita de' Monti, Rome; and of these the "Descent from the Cross" is well known. He died in Rome, April 4, 1566.

Rice, a well known genus of grasses, having panicles of one-flowered spikelets, with two very small pointed glumes, the florets compressed, the paleæ strongly nerved, awned or awnless, six stamens, one germen, and two feathery stigmas. The only important species is the common rice, one of the most useful and extensively cultivated of all grains, supplying the principal food of nearly one-third of the human race. It seems to be originally a native of the East Indies, but is now cultivated in all quarters of the globe. Rice requires a moist soil, sometimes flooded. In some parts of the East canals are carried along the sides of hills for the irrigation of land for the cultivation of rice. In South Carolina rice is sown in rows in the bottom of trenches, which are about 18 inches apart; the trenches are filled with water to the depth of several inches, till the seeds germinate; then the water is drawn off, and afterward the fields are again flooded for rather more than a fortnight to kill weeds. They are flooded again when the grain is near ripening. In Europe the cultivation of rice is most extensively carried on in the plains of Lombardy and in Valencia in Spain. The best of all rice known in the market for size and quality is that of South Carolina. After South Carolina the principal rice-growing States are Georgia and Louisiana.

Canada rice, the wild rice or Indian rice of North America, is a species of

WATER RICE.

grass quite different from the true rice, and of a different genus. It is common in North America, and particularly abundant in the N. W. parts, growing in miry places or shallow water, often on the margins of lakes. The seeds are about half an inch long, slender, farinaceous, affording very good meal, and are much used by the Indians where the plant abounds.

Rice, Edmund, an American military officer; born in Cambridge, Mass.,

in 1842; entered the Union army at the beginning of the Civil War; appointed captain in 1861; and was mustered out of service as colonel in 1865. He received a medal of honor for conspicuous bravery in the battle of Gettysburg. In 1866 he entered the regular army, rose to colonel, and was assigned to the 5th Infantry in 1870. He organized and commanded the Columbian Guards at the World's Columbian Exposition; was military attache at Tokyo, Japan; appointed Inspector-General, U. S. A., in 1898; served on General Miles' staff; and later was colonel of the 26th Volunteer Infantry. He invented a trowel bayonet, stacking swivel and knife-intrenching bayonet.

Rice, James, an American educator; born in Richmond, Ky., Nov. 25, 1842; was graduated at Georgetown College, Ky., in 1866, president of Concord College in 1868–1872 and 1876–1880; of Lebanon Female College in 1872–1876; of Masonic College in 1880–1888; and of the Southwest Baptist College after 1897.

Rice, Willard Martin, an American clergyman; born in Lowville, N. Y., April 30, 1817; was graduated at Wesleyan University in 1837. He was ordained in the Presbyterian Church in 1858, and held charges in Philadelphia till 1884. He became a member of the Presbyterian Board of Publication in 1862; and after 1876 was engaged on the various publications of the Board.

Rice, Wallace (de Groat Cecil), an American literary critic; born in Hamilton, Canada, Nov. 10, 1859; was educated at Harvard University, and admitted to the Chicago bar in November, 1884. He served as reporter and critic on various Chicago papers.

Rice, William Morton Jackson, an American painter; born in Brooklyn, N. Y., Feb. 18, 1854; was graduated at Cornell University in 1874; studied painting in Paris.

Rice, William North, an American educator; born in Marblehead, Mass., Nov. 21, 1845; was graduated at the Wesleyan University in 1865; was Professor of Geology and Natural History at the Wesleyan University in 1867–1884; and of Geology after 1884; and was assistant geologist of the United States Geological Survey in 1891–1892.

Rice Bunting, a name given to two distinct birds. The first, also known by the name "bob-o-link," is a bird of the bunting family, which migrates over North America from Labrador to Mexico. The song of the male is singular and pleasant. When fat their flesh becomes little inferior in flavor to that of the European ortolan. The other species, known as the rice bunting, is also known as the Java sparrow, and paddy bird. It belongs to the true finches, a group nearly allied to the buntings. It is dreaded in Southern Asia on account of the ravages it commits in the rice fields. It is frequently brought to Europe, and is found in aviaries.

Rice Paper, the produce of the Aralia papyrifera, a low shrub, with large leaves, from Formosa, where it is wild and abundant. The trunk and branches resemble those of the elder. The pith, dried and rolled, or hammered, and pared by sharp knives, forms the paper.

Rich, Edmund, an English ecclesiastic; born in Abingdon, England, about 1195. He became archbishop of Canterbury in 1233, and exhibited great energy as a reformer. He died in 1242.

Richard I., King of England, surnamed Cœur de Lion; third son of King Henry II. and his wife, Eleanor of Aquitaine; born either at Oxford or at Woodstock, Sept. 8, 1157. In England Richard did not spend in all his life a full year; after he became king he spent only 26 weeks in his kingdom, 17 weeks when he landed to take the crown and to go through the coronation ceremony at Westminster, and nine weeks when he came back from his imprisonment.

Richard became King of England, Duke of Normandy, and Count of Anjou on July 5, 1189, and was crowned King of England on Sept. 3, following. But he had already taken the vows of the crusader; and besides his coronation, he had another object in coming to England; he wanted to raise funds for his crusade. He effected this latter purpose in a brief space of time by selling whatever he could get a purchaser for. About midsummer 1190 he met Philip of France at the rendezvous, Vezelai in France. Both kings spent the winter in Sicily, and

their mutual jealousy came within a hair's-breadth of a rupture.

On his way to Palestine in the spring of 1191, part of the fleet of the English king was driven on to the island of Cyprus, and the crews were most inhospitably treated by the reigning sovereign, Isaac Comnenus, a nephew of the Emperor of Byzantium, who had revolted from his liege lord. Richard sailed back from Rhodes, routed Isaac in battle, deposed him, and gave his crown to Guy of Lusignam. In Cyprus, too, he married Berengaria of Navarre, whom his mother had brought to him at Messina. At last, on June 8, the English king landed near Acre, and shortly afterward that stronghold surrendered, the siege having lasted two years. The glorious exploits of Richard the Lionhearted — his march to Joppa along the seashore, his approach on Jerusalem at Christmas, his capture of the fortresses in the S. of Palestine, his second advance in the summer of 1192 on Jerusalem, and his relief of Joppa — made his name ring throughout the East and excited the wonder and admiration of Christendom, but brought no real advantage to the crusading cause.

Richard in September concluded a peace with Saladin for three years, three months, and three days, and in his impulsive, impatient way started off home alone, without waiting for his army and fleet. A storm shipwrecked him near the N. end of the Adriatic. In disguise he began to make his way through the dominions of his bitter enemy, the Archduke of Austria. He was recognized, seized, and handed over to the Emperor Henry VI. (March, 1193). The emperor demanded a heavy ransom for his release, but promised to give him the kingdom of Arles in addition to his liberty. Richard's loyal subjects raised the money; and greatly to the chagrin of Philip of France and Richard's brother John, the captive king returned home (March 13, 1194).

In England in the meantime Longchamp had made himself so unpopular that Richard had been obliged to supersede him, appointing in his place Walter of Coutances, Archbishop of Rouen. After distributing judicious rewards and punishments, raising what money he could, making arrangements for the governance of the kingdom, and being crowned again, Richard proceeded to France, and spent the rest of his life there, warring against Philip. England was governed in his absence by Hubert Walter, Archbishop of Canterbury, who by the measures he took to raise the vast sums demanded by his master trained the English people in habits of self-government. Richard was shot, on April 7, 1199, by an archer of the Viscount of Limoges, while besieging that nobleman's castle of Chalus-Chabrol, and was buried in the abbey church of Fontevraud.

Richard II., King of England; son of the Black Prince and Joanna of Kent; born in Bordeaux, Jan. 6, 1367; was acknowledged by Parliament heir to the crown on the death of his father in 1376, and succeeded his grandfather, Edward III., on June 21, 1377. The government was entrusted to a council of 12, from which the king's uncles, John of Gaunt, Duke of Lancaster, Edmund, Earl of Cambridge, and Thomas, Earl of Buckingham, were excluded. Nevertheless the central figure during the early years of this reign, as he had been during the last years of the preceding reign, was John of Gaunt, whose overreaching ambition and inability were a fruitful source of disquietude.

The imposition of a graduated poll-tax in 1380 provoked popular risings, directed principally against the gentry and landholders, in nearly all parts of the kingdom, at Whitsuntide in the following year. The men of Essex and Kent, to the number of 100,000, marched on London. The former body, whom the king met at Mile End on June 14, consented to return home when the the young monarch assured them he would grant their requests. The men of Kent, after destroying the Savoy, burning Temple Bar, opening the prisons, and breaking into the Tower and slaying the Archbishop of Canterbury, met the king at Smithfield (15th). During the negotiations, William Walworth, the mayor of London, struck down Wat Tyler, the leader of the insurgents. The king immediately rode among them, exclaiming he would be their leader, and granted them the concessions they asked. From

the fact that the insurgents directed their enmity against himself and the advisers of the king, John of Gaunt saw that he could never hope to succeed in his ambitious schemes in England; and from this time he kept very much in the background, till in 1386 he carried himself and his restless plottings to Spain and Gascony. Richard in 1390 made him Duke of Aquitaine for life. In 1385 Richard invaded Scotland, and took Edinburgh and burned it; but, not encountering the Scotch, returned home.

On May 3, 1389, Richard suddenly declared himself of age, and proceeded to govern on his own responsibility. For eight years he ruled as a moderate constitutional monarch, and the country enjoyed peace — hostilities with France were not renewed after 1388 — and was fairly prosperous. But in 1394 Richard's first wife, Anne of Bohemia, whom he had wedded in 1382, died, and two years later he married Isabella, daughter of Charles VI., of France, a girl of eight. In the Parliament of 1397 he began to assert the pretensions of an absolute monarch. On July 8 he had Gloucester, Arundel, and Warwick arrested on the charge of conspiring against the crown. Arundel was beheaded; Gloucester was sent a prisoner to Calais, and died there in prison, a fortnight after his arrest; and Warwick was banished to the Isle of Man. Thomas Arundel, Archbishop of Canterbury, was also banished.

Richard soon aroused the slumbering discontent of his subjects by his unjust methods of raising money, principally by means of forced loans, and by his arbitrary and despotic rule. In the beginning of 1398 the Duke of Norfolk and the Duke of Hereford were accused to the king of having spoken treason against him. Richard banished them — Norfolk for life and Hereford for 10 years. In January, 1399, John of Gaunt died, and Hereford succeeded him as Duke of Lancaster; but the king refused to give up to the exile the lands of his dead father. Richard in May went over to Ireland, which he had previously visited at the head of a military expedition in 1394–1395. Henry of Lancaster seized on the opportunity afforded by the king's absence, and landed on July 4. Richard at once hurried back, but had neither heart nor power to withstand his cousin. He submitted to Lancaster at Flint Aug. 19, was carried to London, and placed in the Tower. On Sept. 29 he resigned the crown, and on the following day was likewise deposed by the Parliament, which chose Henry of Lancaster as his successor.

A month after his resignation Richard was condemned to perpetual imprisonment by Parliament. His fate is wrapped in obscurity, beyond the almost certain fact that he met a violent death.

Richard III., King of England; son of Richard, Duke of York, fifth son of Edward III.; born in Fotheringhay Castle, Oct. 2, 1452. After the defeat and death of his father in 1460 he was sent, along with his brother George, to Utrecht for safety, but returned to England after his eldest brother Edward won the crown (1461). Two years later he was created Duke of Gloucester, his brother George being made Duke of Clarence. In the final struggle between the York and Lancaster factions he took an active share. All through the reign of Edward IV. he gave valuable and faithful support to his brother, and was rewarded by him with every confidence, and with numerous high offices.

In 1472 he married Anne, the younger daughter of Warwick the Kingmaker, who had been betrothed to the murdered Prince Edward. In 1482 he was put in command of the army that invaded Scotland. Along with the Duke of Albany he entered Edinburgh; but his one warlike achievement was the capture of Berwick town and castle. In the following year, while still in Yorkshire, he heard of King Edward's death (April 9), and learned that he himself had been named guardian and protector of his son and heir, Edward V., then aged 13. On his way S. the Protector arrested Earl Rivers and Lord Richard Grey, the uncle and step-brother of the young king, and confined them in his castles.

The arrest of Rivers and Grey had put the king entirely into his hands, for the queen-mother had hastened to take sanctuary at Westminster. On June 13 Gloucester suddenly accused Lord Hastings, an influential member of the council, of treason, arrested him

there and then, and had him instantly beheaded. On June 16 the queen-dowager was induced to give up, at the demand of Richard and the council, her other son, the little Duke of York. He was put into the Tower to keep his brother, the king, company. On the Sunday following (22d) a certain Dr. Shaw preached at St. Paul's cross that the children of Edward IV. were illegitimate. Three days later the Parliament desired Richard to assume the crown; on the next day (June 26, 1483) he declared himself king, and on July 6 was crowned in state by Cardinal Bourchier.

Shortly after his coronation Richard set out on a tour through the kingdom, and during the course of it he was surprised by the intelligence that Buckingham was plotting with the friends of Henry Tudor (afterward Henry VII.), to effect his overthrow and proclaim Henry king. But the attempted rising soon collapsed, and Buckingham was taken and on Nov. 2 executed. It seems to have been shortly before this that Richard contrived the foul crime that has branded him name with infamy, the murder of his nephews in the Tower. The deed was done so secretly by Sir James Tyrrell, one of Richard's devoted followers, and a couple of hirelings, that the nation did not know of it till some time after.

During the remainder of his short reign Richard directed all his energies to baffling the plans of Richmond, and to making preparations to meet the invasion which he saw to be imminent. Henry of Richmond at length landed at Milford Haven on Aug. 7, 1485. Richard met him at Bosworth in Leicestershire on the 22d, and there lost his kingdom and his life.

Richard Plantagenet, King of the Romans; second son of John, King of England; born Jan. 5, 1209. For some years he acted with the English barons, to many of whom he was closely related by his marriage with Isabel, Countess of Gloucester, daughter of the Earl of Pembroke. In 1240–1241 Richard was away on a crusade, and the next year he was with his brother in Gascony; and in 1244 he married Sanchia of Provence, sister of Queen Eleanor, and this second marriage drew him away from the baronage. In 1257 he was elected by a majority titular king of the Romans, and was soon afterward crowned at Aix-la-Chapelle. In the great struggle which took place between Henry III. and his nobles Richard at first acted as a peacemaker. Subsequently, however, he sided with his brother against Simon de Montfort; and he was taken prisoner at Lewes, and imprisoned for a year, till the battle of Evesham (1265) set him free. In 1267 he was a third time married, to Beatrice, niece of the Elector of Cologne. Richard died at Kirkham, Dec. 12, 1271.

Richards, Charles Brinckerhoff, an American engineer; born in Brooklyn, N. Y., Dec. 23, 1833; was superintendent of Colt's Arms Company, of Hartford, for many years. In 1861 he invented the Richard's indicator for steam engines; was one of the United States expert commissioners to the Paris Exposition in 1889; editor of the engineering and technical terms in "Webster's International Dictionary."

Richards, Charles Herbert, an American clergyman; born in Meriden, N. H., March 18, 1839; was graduated at Yale University in 1860, and at the Andover Theological Seminary in 1865; and afterward served in the ministry of the Congregational Church. He conducted the Monona Lake Assembly in Madison, Wis., in 1881–1884; was president of the Wisconsin Home Missionary Society in 1885–1890; lectured on Hymnology and Church Music at Yale University in 1895.

Richards, Edgar, an American chemist; born in New York, Feb. 23, 1858; took a course in chemistry at the School of Mines in Columbia University in 1876–1881; was assistant chemist in the United States Department of Agriculture in 1882–1887; assistant chemist in the Internal Revenue Bureau of the United States Treasury Department in 1887–1892; president of the Washington Chemical Society in 1889.

Richards, Laura Elizabeth, an American writer of juvenile books, daughter of Julia Ward Howe; born in Boston, Mass., in 1850. She published a great number of children's books.

Richards, William Frost, an American landscape and marine painter; born in Philadelphia, Pa., Nov. 14, 1833. From 1878 till 1880, he had a studio in London, England. He then returned to Philadelphia. At the Metropolitan Museum, in New York city, is a series of 47 water-color marines and landscapes, painted by him in 1871–1876. His "Wissahickon" was on exhibition at the Centennial Exposition in 1876. In the Corcoran Art Gallery, Washington, D. C., is hung his "On the Coast of New Jersey."

Richardson, Abby Sage, an American lecturer and writer on literary topics; wife of Albert Deane Richardson; born in Massachusetts, in 1837. She died in Rome, Italy, Dec. 5, 1900. She was a woman of remarkable ability, and gave an admirable example in the devoted care of her children.

Richardson, Albert Deane, an American journalist; born in Franklin, Mass., Oct. 6, 1833. He was famous as the war correspondent of the New York "Tribune" during the Civil War, and was imprisoned with others for 18 months as a result of their undertaking to run the batteries of Vicksburg on two barges. He was murdered by Daniel McFarland in New York city, dying Dec. 2, 1869. Those who knew Mr. Richardson best entirely acquit him of having given any provocation for the crime of which he was the victim.

Richardson, Benjamin Ward, an English physician; born in Somerby, Leicestershire, England, in 1828; was graduated in medicine at St. Andrew's University. He originated the use of ether spray for the local abolition of pain in surgical operations, and introduced methylene bichloride as a general anæsthetic.

Richardson, Charles, an English lexicographer; born in July, 1775. He was trained as a barrister, but devoted himself to literature. He died in Feltham, near London, England, Oct. 6, 1865.

Richardson, Henry Hobson, an American architect; born in New Orleans, La., in 1838; was graduated at Harvard in 1859. He designed some of the most beautiful buildings in this country. He died in Boston, Mass., April 28, 1886.

Richardson, Sir John, a British naturalist and Arctic traveler; born in Dumfries, Scotland, Nov. 5, 1787. After studying medicine at the University of Edinburgh he entered the royal navy, in 1807, as assistant-surgeon. He served on various stations till 1819, and was surgeon and naturalist to the Arctic expeditions of 1819–1822 and 1825–1827, under Sir John Franklin, exploring on the latter occasion the shores of the Arctic Ocean between the Mackenzie and Coppermine rivers. In March, 1848, he took charge of an expedition to search for Franklin. He died near Grasmere, England, June 5, 1865.

Richardson, Samuel, an English novelist; born in Derbyshire, in 1689. In 1706, at the age of 16, he was bound by his own wish to John Wilde of Stationers' Hall, a printer, with whom he served the usual period, ultimately completing the orthodox programme of exemplary apprenticeship by marrying his master's daughter. From 1713 to 1719 he worked as a journeyman printer. In the latter year he opened an establishment of his own.

He printed more than one newspaper, and by the favor of Speaker Onslow obtained the printing of the journals of the House of Commons, 26 volumes of which passed through his establishment. He was over 50 when two bookselling friends invited him to prepare a volume of familiar letters in a common style, on such subjects as might be of use to those country readers who were unable to indite for themselves. Hence sprung "Pamela," published in November, 1740. Its title was "Pamela: or Virtue Rewarded."

In February followed a second edition; a third succeeded in March, and a fourth in May. Grub street fastening promptly on this unexampled popularity, hastily put together for a sequel a "Pamela in High Life."

Eight years elapsed before Richardson published another novel. "Clarissa; or the Adventures of a Young Lady," known generally as "Clarissa Harlowe." The heroine is drawn with a tenacity of insight to which "Pamela" could scarcely pretend; and the

chief male character, that of Lovelace, is scarcely inferior.

Having drawn the ideal woman in "Clarissa," Richardson proceeded, some five years later, to portray, in "Sir Charles Grandison," the perfect man — "the man of true honor." This is a work of much greater ability than "Pamela," but still far below "Clarissa." In later life a nervous habit grew upon him, which terminated in 1761 by a fit of apoplexy, of which he died.

Richardson, William Adams, an American jurist; born in Tyngsboro, Mass., Nov. 2, 1821; was graduated at Harvard University in 1843, and at its law school in 1846, and was admitted to the Boston bar in 1848. In 1856 he was appointed judge of the probate court of Middlesex county, and in 1869, assistant secretary of the United States Treasury, becoming secretary in 1873. He resigned that office in 1874 to accept a seat on the bench of the United States Court of Claims, being made chief-justice of the court in 1885. He died in Washington, D. C., Oct. 19, 1896.

Richelieu, Armand Jean Duplessis, Cardinal, Duc de, a French statesman; born in Richelieu, Sept. 5, 1585. He abandoned a military career for the Church. Representative of the Poitou clergy at the States-general in 1614, he attracted the notice of the queen-mother, and rose in 1616 to be secretary of war and foreign affairs; but the downfall of Marshal d'Ancre, the queen-regent's favorite, in April, 1617, sent him back to his diocese. In 1622 he was named cardinal and in 1624 Minister of State. His first important measure was the blow to Spain of an alliance with England, cemented by the betrothal (1625) of the king's sister, Henrietta, with Charles, then Prince of Wales. His next task was to destroy the political power of the Huguenot party. After a 15 months' siege, concentrating all his energy on the task, the great stronghold of La Rochelle was starved into submission, Oct. 30, 1628. Early in 1630 he entered Italy and soon reduced Savoy to submission. The first treaty of Cherasco (April, 1631), ended the Italian war, the second gave France the important strategic position of Pinerolo.

In July, 1632, Richelieu had seized the duchy of Lorraine. He continued his intrigues with the Protestants against Ferdinand, but till 1635 he took no open part in the war. In May of that year, after completing his preparations he declared war on Spain and at once placed in the field an army of 132,000 men. But his first efforts were unsuccessful.

With 30,000 foot and 12,000 horse he swept the enemy out of Picardy, while his ally Bernhard drove them across the Rhine, and in 1638 destroyed the imperial army in the decisive battle of Rheinfelden. The unexpected death of Bernhard threw the fruit of his victories into the hands of Richelieu — revolts in Catalonia, and the loss of Portugal; the victories of Wolfenbuttel (1642) and Kempten (1642) over the Imperialists in Germany; and at length in 1641 in Savoy also in the ascendency of the French party. Another triumph that same year was the speedy collapse of the Imperialist invasion in the N. by the Count of Soissons, who perished in the first battle. The failure to capture Tarragona was the one exception to the complete triumph of the cardinal's latest years.

The last conspiracy against him was that of the grand-equerry, the young Cinq-Mars, whose intrigues with Gaston, the Duke of Bouillon, and the Spanish court were soon revealed to the cardinal. When the hour was ripe he placed in the king's hands at Tarascon proofs of the traitorous plot with Spain, and was given full powers as lieutenant-general of the realm. Cinq-Mars and De Thou were at once arrested, and Gaston of Orleans, hastened to buy his own security by betraying his accomplices. Cinq-Mars and De Thou were executed at Lyons in the autumn of 1642. But the great minister was himself dying in the hour of his greatest triumphs. He died Dec. 4, 1642, bequeathing Mazarin to the king as his successor.

Richmond, a town in Madison co., Ky.; 25 miles S. E. of Lexington. It is memorable as the scene of one of the most desperate battles of the Civil War. The Confederate general, E. Kirby Smith, in command of 18,000 troops, attacked a much larger Union army under command of Gens. M. D.

Manson and William Nelson, and after a three hours' battle utterly defeated the Union forces, whose loss including killed, wounded and prisoners, was 5,000.

Richmond, a city, port of entry, capital of the State of Virginia, and county-seat of Henrico co.; on the James river; 116 miles S. E. of Washington, D. C. The city is about 127 miles from the ocean. The James river is navigable for large vessels. The city is built on seven hills, and is surrounded by beautiful scenery.

There are upward of 600 manufacturing establishments, of which nearly 90 are engaged in the tobacco industry, the remainder being of flour, paper, fertilizer, iron, steel, etc. A number of its flour mills and one of its rolling mills are among the largest in the United States.

The city covers an area of 5 square miles; and has 116 miles of streets, of which 23 miles are paved; a system of waterworks that cost $2,500,000, and 100 miles of mains; and a sewer system covering 53 miles. The streets are lighted by gas and electricity. There is a public school enrollment of nearly 12,000 pupils and annual expenditures for public education of over $166,859.21. The annual cost of maintaining the city government exceeds $1.500,000. The death rate averages 18.57 per 1,000 annually. The capitol, which stands on Shockoe Hill, and is surrounded by most of the other public buildings, is an imposing structure, dating from 1785. In the Central Hall, surmounted by a dome, are a statue of Washington and bust of Lafayette, Gen. Fitz Hugh Lee, and others. The Senate Chamber, to the right, was used as the Confederate House of Representatives during the Civil War. The House of Delegates, to the left, contains portraits of Chatham and Jefferson, and was the scene of Aaron Burr's trial for high treason in 1807 and of the State Secession Convention in 1861. The executive mansion of the Confederate States, formerly the residence of Jefferson Davis, has been converted into a museum which contains many relics of the Civil War. The other notable public buildings include the City Hall, State Library, State Penitentiary, almshouse, custom house, etc. The prominent educational institutions are Richmond College (Bapt.), St. Joseph Female Academy (R. C.), the Medical College of Virginia, University College of Medicine, Women's College, and Mechanics' Institute.

Richmond is said to have first been settled in 1609. Fort Charles was built as a defense against the Indians in 1644–1645. The city was incorporated in 1742, and became the capital of the State in 1779. In June, 1861, it was selected as the Confederate capital, and from that period was the objective point of a series of formidable military expeditions for its capture. Pop. (1900) 85,050.

During the last three years of the Civil War (1862–1865) battles raged all round Richmond, and remains of the fortified lines constructed to protect the city are visible in various parts of the environs. Both the inner and outer fortifications may be seen from the Brook Road, which leads to the Lakeside Club House, with its golf links, bowling alleys and boating lake. The chief direct attack on Richmond was made on May 15, 1862, when the Union fleet attempted, without success, to force its way past the batteries at Drewry Bluff, on the James river, 7 miles below the city. Simultaneously General McClellan advanced with the land forces up the peninsula between the York and James rivers and invested Richmond on the E. and N. This led to the hardly contested but indecisive battle of Seven Pines or Fair Oaks (May 31, 1862), in which the Confederates under Gen. Joseph E. Johnston attacked McClellan's left wing, to the S. of the Chickahominy. Large cemeteries and a park now mark the spot, 7 miles to the E., reached by the West Point railroad. The district is swampy, and McClellan lost more men by pestilence than in fighting. Gen. Robert E. Lee assumed command of the Confederate forces and made an attempt, in combination with Gen. "Stonewall" Jackson, to overwhelm McClellan's right wing, which was posted at Mechanicsville, on the Chickahominy, 5½ miles to the N. of Richmond, and thus began the famous Seven Days' Battle (June 28–July 2, 1862). Mechanicsville was followed by the battles of Gaines's Mill, Cold Harbor, Savage's

Station, Frazier's Farm, and Malvern Hill. The upshot of this series of contests, in which 40,000 men fell, was the relief of Richmond, as the Union troops were compelled to retreat to Malvern Hill, 15 miles to the S. E., where they repelled the Confederates in their last attack but soon after withdrew to Harrison's Landing, on the James River. During 1863 there were no direct attacks on Richmond. In May, 1864, General Grant marched down through the "Wilderness" and attacked Lee in his entrenched position at Cold Harbor (June 3, 1864), and lost 15,000 men without making much impression on the enemy. He then transferred his army to the S. side of the James; and the later stages of the war were rather a siege of Petersburg than of Richmond.

Richmond College, a coeducational institution in Richmond, Va.; founded in 1832, under the auspices of the Baptist Church.

Richter, Johann Paul Friedrich, known by his pen-name of Jean Paul, a German humorist; born in Wunsiedel, North Bavaria, March 21, 1763. Being poor, he got into debt all round, and in November, 1784, fled secretly from Leipsic to go and hide his head in the poverty-stricken home of his mother (a penniless widow since 1779) at Hof. His first literary "children" were satires; but he could get no publisher to introduce them to the world, till in 1783 Voss of Berlin gave him 40 louis d'or for "The Greenland Lawsuits." The book was a failure.

For three years Jean Paul struggled on at home, his mother spinning hard for bread, he helping with a few florins he earned by his pen. He read enormously, omnivorously. In the beginning of 1787 he began to teach the children of different families in the district, and of course taught by original methods. All this time he still went on writing. "The Invisible Lodge" was his first literary success; "Hesperus" made him famous. In 1796 Charlotte von Kalb wrote to express her admiration of the book; and a few months later, at her invitation, Jean Paul visited Weimar. There Goethe received him politely; that, too, was Schiller's attitude, when Jean Paul went on to Jena to see him. Herder and his wife, on the other hand, greeted the young romance-writer with overflowing admiration. As for Charlotte von Kalb, she did not stop at friendship; in spite of having a husband already, she exercised her sex's fabled privilege of leap-year — her first letter to him was dated Feb. 29 — and gave him unasked the love of her vehement heart.

In 1801 he married a Berlin lady, and three years later settled down at Bayreuth, attracted by its beauties of hill and valley, and by its beer. There he spent the rest of his days. His last years were clouded by the death of his only son, a promising student, in 1821, and by his own blindness. From 1799 he enjoyed a pension from the Prince-primate Dalberg, and then from the King of Bavaria. He died Nov. 14, 1825.

Richthofen, Ferdinand, Baron von, a German geographer; born in Karlsruhe, Silesia, May 5, 1833; in 1860 accompanied a Prussian expedition to Eastern Asia. The next 12 years he spent in traveling through Java, Siam, Burma, California, Sierra Nevada, and China and Japan. After his return to Europe (1872) he was appointed president of the Berlin Geographical Society, Professor of Geology at Bonn, and of Geography at Leipsic, and at Berlin. His reputation as a geographer is built principally upon his great work on "China" and upon "The Metallic Production of California." He died in 1888.

Ricinus, a genus of plants, order Euphorbiaceæ. R. communis is the palma christi or castor-oil plant, a native of the East and West Indies and Florida. Castor oil is obtained from the seeds, either by expression with or without the aid of heat, or by decoction, or sometimes by the aid of alcohol.

Rickets, a disease peculiar to infancy, chiefly characterized by changes in the texture, chemical composition, and outward form of the bony skeleton and by altered functions of the other organs, transient for the most part, but occasionally permanent.

Ricketts, James Brewerton, an American military officer; born in New York city, June 21, 1817; was graduated at the United States mili-

tary academy, in 1839; was a captain in the regular army in 1852; and gained a record for excellent service during the Mexican War. In 1861 he was appointed a Brigadier-General of volunteers, and commanded a division at the battle of Antietam, in September, 1862. He was in the thick of the battle of the Wilderness, May 5 and 6, 1864; was severely wounded at the battle of Cedar Creek Oct. 19, 1864; and was brevetted Major-General, U. S. A., in 1865. He served in the Army of the Potomac from the first battle of Bull Run till Petersburg was besieged in 1864. He died in Washington, D. C., Sept. 22, 1887.

Rickman, Thomas, an English architect; born in Maidenhead, Berkshire, in 1776; seems to have always had a love for architecture, and to have studied it carefully. Having sent in a design for a church that proved successful in a government competition, he settled at Birmingham as an architect. He died in March, 1841.

Ricord, Philippe, a French physician; born in Baltimore, Md., Dec. 10, 1800; went to Paris in 1820. Ricord discovered a cure for varicocele, etc., for which he received, in 1842, the Monthyon prize. He died in Paris, Oct. 22, 1889.

Rideau Canal, a Canadian canal constructed between Kingston on Lake Ontario and Ottawa as a through waterway by means of the river Ottawa to Montreal, the St. Lawrence route being interrupted by rapids. Canals have since been built along the St. Lawrence to avoid these, and the Rideau is now little used.

Rideing, William Henry, an American author; born in Liverpool, England, Feb. 17, 1853. In 1881 he became associate editor of the "Youths' Companion."

Riders, additional provisions of a bill under the consideration of a legislative assembly, having little connection with the subject-matter of the bill. The consequence of this custom is, practically, a limitation of the veto power of the executive. It has been proposed frequently that the Constitution of the United States be so amended that the President could veto single objectionable items, without affecting the main purpose of bills.

Ridgeway, Robert, an American naturalist; born in Mt. Carmel, Ill., July 2, 1850. He early turned his attention to natural history and was zoölogist to the United States geological expedition under Clarence King in the Western States in 1867–1869. He was one of the founders of the American Ornithologists' Union, of which he became president.

Riding, the art of sitting on horseback with firmness, ease, and gracefulness, and of guiding the horse and keeping him under perfect command.

Ridley, Nicholas, an English clergyman, Bishop of London in the reigns of Edward VI., and his successor Mary; born about the commencement of the 16th century; filled the office of proctor to Cambridge University. In 1547 he was chosen to the see of Rochester, and in 1550 superseded Bonner as Bishop of London. On the death of Edward he was involved in an attempt to secure the Protestant ascendency by placing the Lady Jane Grey on the throne. This, together with his connection with Cranmer, led to his being tried for heresy, found guilty, and was condemned to the stake. This sentence he underwent with the greatest fortitude, in company with his friend and fellow-sufferer Latimer, Oct. 16, 1555, in Oxford.

Ridpath, John Clark, an American educator; born in Putnam co., Ind., April 26, 1840; and later held a professorship in Baker University, Kansas. In 1869 he became Professor of English Literature at Asbury University, Indiana, and was elected its vice-president in 1879. In 1874–1875 he published a "History of the United States" which he supplemented with another in 1877. In 1876 he issued a "School History," and in 1879 an "English Grammar." Desiring to devote his whole time to literature he resigned his university offices. He died in New York city, Aug. 1, 1900.

Riel, Louis, a Canadian insurgent, born in Boniface, Oct. 23, 1844. He led the Metis' Red River rebellion in 1869, which was subdued by a Canadian force. He fled from the territory to escape arrest, and returned after peace terms had been arranged.

He was elected to the Dominion Parliament in 1873, but was not allowed to take his seat. His attempt to create resistance in 1885 was more successful, but the rebellion was short-lived. Riel was captured, tried for treason, and was sentenced to death. He was executed Nov. 16, 1885, at Regina in the Northwestern Territory.

Rienzi, Nicola Gabrini, a Roman patriot; born about 1310. He was sent by his fellow citizens to Clement VI., at Avignon, in order to prevail on that pontiff to return to Rome. His eloquence pleased the Pope, though it did not persuade him; and Rienzi on his return formed the design of making himself master of Rome. Having gained a considerable number of partisans, he entered the capitol, harangued the people, and elevated the standard of liberty. He designed to unite the whole of Italy into one great republic, with Rome for its capital. At length a conspiracy was formed against him; and having lost the popular favor by his arrogance and tyranny, he was compelled to seek safety in flight, but was taken and cruelly put to death in 1352.

Rietbok, in zoölogy the reed-buck, a South African antelope. It is about four feet in length, and nearly three feet high at the shoulder.

Rifle, a portable firearm, the interior surface of the barrel of which is grooved, the channels being cut in the form of a screw. The number of these spiral channels or threads, as well as their depth, varies in different rifles, the most approved form being with the channels and ridges of equal breadth, and the spiral turning more quickly as it nears the muzzle. The bullet fired is now always of an elongated form. The great advantage gained by a weapon of this construction is that the bullet discharged from the piece, by having a rotatory action imparted to its axis coincident with its line of flight, is preserved in its direct path without being subject to the aberrations that injure precision of aim in firing with unrifled arms. As a necessary consequence of the projectile being carried more directly in its line of aim, its length of range, as well as its certainty in hitting the object is materially increased. Sporting rifles have a shorter range and inferior velocity to the best military weapons, their object being not extreme range or penetration, but great force at impact to produce such a shock as will paralyze the animal shot.

Rifle Bird, often spoken of as one of the "Birds of Paradise"; is perhaps the best-known species of a genus, which comprises four species confined to Australia and to New Guinea. P. paradiseus inhabits the S. E. districts of Australia, and is found only in very thick "bush." The male is regarded as more splendid in plumage than any other Australian bird.

Riga, a city and capital of Livonia, and after St. Petersburg and Odessa the third seaport of Russia, on the Dwina river, 7 miles from the mouth of the river, and 350 S. W. of St. Petersburg, via Pskoff. The old town has narrow streets and mediæval houses and stores; but the suburbs are laid out in broad streets with handsome buildings. The chief edifices are the cathedral built in 1204, burned down in 1547, but rebuilt; St. Peter's Church (1406), with a steeple 460 feet high; the castle of the old Knights of the Sword, built 1494–1515, the former residence of the grand-master of the order; and several old guild houses and Hanseatic halls. Riga was founded in 1201 by Albert, Bishop of Livonia, and soon became a first-rate commercial town, and member of the Hanseatic League. In 1710 was annexed to Russia. Pop. 256,197.

Riggs, John Davis Seaton, an American educator; born in Washington, Pa., Jan. 29, 1851; was graduated at the University of Chicago in 1878; principal of the commercial department of Salt Lake Academy, Utah; and of the preparatory department of the old University of Chicago; joint principal of the University Academy in Chicago; organizer and principal of Granville (now Doane) Academy of Denison University, and president of Ottawa University after 1896.

Riggs, Kate Douglas Wiggins, an American author; born in Philadelphia, Pa.; was graduated at Abbott Academy in 1878; organized the first free kindergarten for poor children

on the Pacific coast, and continued interested in the work.

Riggs, Robert Baird, an American chemist; born in Hazelwood, Minn., May 22, 1855; was graduated at Beloit College, Wis., in 1876; Professor of Chemistry at the National College of Pharmacy in 1885–1887; and later became Professor of Chemistry at Trinity College, Hartford.

Rights, Declaration and Bill of. Two documents adopted in England; the Declaration (February, 1689), stating that James II. had committed certain acts contrary to the law, and declared the throne vacant. The Bill (October, 1689), set forth that the monarch had no power of suspending laws, the levying of money without consent of parliament is illegal; also the keeping of a standing army in time of peace without accession thereto by parliament is also illegal; election of members to parliament should be free; that free speech should be granted in parliament; condemns excessive bail and excessive fines or unusual punishments; claims the right of petition to the crown, and trial by jury; that parliament should meet frequently; and that all ecclesiastical courts are illegal. It also treats of succession to the crown.

Rights of Man, Declaration of the, a famous statement of the constitution and principles of civil society and government adopted by the French National Assembly in August, 1789. In historical importance it may fairly be ranked with the English Bill of Rights and the American Declaration of Independence.

Riis, Jacob August, born in Ribe, Denmark, May 3, 1849, son of Niels Edward Riis. Came to New York, and after some interesting adventures joined the staff of the New York "Sun" as a police reporter. Kept his eyes open to his surroundings and was first to call public attention in vivid and impressive style to the needs and struggles of the poor of America's metropolis. His book, "How the Other Half Lives," was received with interest and awakened philanthropy to a sense of its duty to less fortunate humanity in the great cities.

Riker, Albert Burdsall, an American clergyman; born in New Albany, O., Oct. 19, 1852; was graduated at Wesleyan University in 1879; held pastorates in Ohio, Tennessee, and West Virginia, and in 1898 became president of Mount Union College, Alliance, O.

Riley, Benjamin Franklin, an American clergyman; born in Pineville, Ala., July 16, 1849; was graduated at Erskine College, South Carolina, in 1871; entered the ministry of the Baptist Church in 1872; was president of Howard College in 1888–1893, and Professor of English Literature at the University of Georgia in 1893.

Riley, Franklin Lafayette, an American educator; born near Hebron, Lawrence co., Miss., Aug. 24, 1868; was graduated at the Mississippi College in 1889; and later studied at Johns Hopkins University; was president of Hillman College for Young Women in 1896–1897; and became Professor of History at the University of Mississippi in 1897.

Riley, James Whitcomb, an American poet; born in Greenfield, Ind., in 1853. His contributions to newspapers and magazines first attracted public attention about 1875. His writings soon became so popular that he devoted himself to literature and public readings of his work with great success. His poems are characterized by both humor and pathos and by their sympathy with the simplest phases of life. Those of the Hoosier type are especially popular.

Rinehart, William Henry, an American sculptor; born in Carroll co., Md., Sept. 13, 1825; went to Baltimore in 1846; and found employment at his trade of stone cutter. He attended night school at the Maryland Institute and studied art; went to Italy in 1855 and studied under the best masters in sculpture. He opened a studio on his return to Baltimore, but in 1858 established himself in Rome. He completed Crawford's bronze doors for the National Capitol at Washington. He died in Rome, Oct. 28, 1874.

Riner, John A., an American jurist; born in Preble co., O., in 1850; was graduated at the University of Michigan in 1879; later removed to Wyoming; became city attorney of Cheyenne in 1881, United States dis-

trict attorney of Wyoming in 1884, a member of the upper house of the Territorial legislature in 1886, and of the Constitutional Convention in 1889; later was a member of the State Senate and on Sept. 23, 1890, he was appointed United States district judge for the district of Wyoming.

Ring, any circle or section of a cylinder. Rings of gold, silver, and of

FIG. 1.

other metals and materials have been worn in all times and countries, and while they have been used to decorate the ears, neck, nose, lips, arms, legs, and toes, finger rings have always occupied the most important and significant place among such ornaments. From the earliest period of civilized relationships the finger ring was a convenient means for carrying the signet of its wearer. Fig. 1, shows a Jewish marriage ring beautifully wrought in gold filigree, and richly enamelled. Fig. 2 shows a form of betrothal ring called a gimmel, or linked ring, which was used in later times; the upper figure shows the three parts brought together, the lower figures the parts separately.

Ringbone, an exostosis or bony tumor mostly met with on the coronet of overworked horses, but sometimes seen on colts.

Ring-dove, or **Cushat,** the largest of the pigeons inhabiting Great Britain, a bird which occurs very generally throughout the wooded parts of Europe. It is migratory in countries in which the severe winters preclude the possibility of its obtaining a due supply of food, and even in Great Britain, in which it permanently resides, it appears on the approach of winter to assemble in flocks, and to perform a limited migration, probably in search of food.

Ringed Snake, a harmless colubrine snake with teeth so small as to be incapable of piercing the skin. It is common in England.

Ring Money, a form of currency consisting of rings which seems to have originated with the Egyptians. It is still used in parts of Africa, and is manufactured in Birmingham for the use of African traders.

Ring Ouzel, a species of thrush, rather larger than a blackbird. It is a native chiefly of the W. parts of Europe.

FIG. 2.

Ringworm, an eruptive disease of the skin, more particularly on the head, and of which there are several kinds.

Rio de Janeiro, or simply Rio, a city and seaport, capital of Brazil and of the province of the same name, the largest and most important city of South America; on the W. side of one of the finest bays in the world, 80 miles W. of Cape Frio. The city stands on a tongue of land close to the shore, on the W. side of the bay, at the foot of several high mountains which rise behind it. The houses are generally built of stone or brick. The

streets are straight, well paved, and have excellent footpaths. The convents and churches are numerous, but none of them can be called fine buildings. Parallel with the beach runs the main street, called Rua de Direita, from which the minor streets branch off at right angles and are intersected by others at regular distances. The imperial palace skirts the beach, and is seen to great advantage from the landing place, which is within 60 yards of its entrance. The other public buildings are the naval and military arsenal, a public hospital, a national library containing about 100,000 volumes. The entrance into it from the sea does not exceed a mile from point to point; it afterward widens to about three or four miles. This city is the chief mart of Brazil. Pop. 510,500.

Rio Grande, Rio Grande del Norte, or **Rio Bravo del Norte,** a large river of North America, rises in the San Juan Mountains in Southwestern Colorado, and flows generally S. E. into the Gulf of Mexico, forming on its way the entire boundary between Texas and Mexico. Its length is about 1,800 miles.

Rio Negro ("black river"), the name of numerous streams, of which two are important: (1) A river of South America, and principal tributary of the Amazon. It rises in Colombia, and joins the Amazon after a course of about 1,000 miles, at Manaos, Brazil. (2) A river of South America forming the boundary between the Argentine Republic and Patagonia. It rises in the Andes in Chile, and is about 700 miles long.

Riordan, Patrick William, an American clergyman; born in New Brunswick, Aug. 27, 1841; removed to Chicago; held charges in Illinois till 1883, when he was consecrated titular archbishop of Cabesa and coadjutor of the Archbishop of San Francisco, Cal., on whose death he succeeded, Dec. 28, 1884.

Riordan, Roger, an Irish-American journalist; born in 1848. He resided in New York city. His publications include "Sunrise Stories," etc.

Riot, a disturbance of the public peace, attended with circumstances of tumult and commotion.

Ripley, George, an American author; born in Greenfield, Mass., Oct. 3, 1802; educated at Harvard University and Cambridge Divinity School; became a Unitarian minister in Boston; lived some years in Europe; was one of the founders of the Transcendental magazine, the "Dial," and the originator and conductor of the communistic experiment at Brook Farm. He died in New York city, July 4, 1880.

Ripley, William, Zebina, an American educator; born in Medford, Mass., in 1867; was graduated at the Massachusetts Institute of Technology in 1890; became lecturer on Sociology at Columbia University in 1893, and Professor of Sociology and Economics at the Massachusetts Institute of Technology in 1895; was appointed expert agent on transportation for the United States Industrial Commission.

Risley, Samuel Doty, an American physician; born in Cincinnati, O., Jan. 16, 1845; served in the Union army during the Civil War; was graduated at the University of Iowa in 1868, and at the Medical Department of the University of Pennsylvania in 1870; made improvements on the optometer and ophthalmoscope.

Ristori, Adelaide, an Italian actress; born in Cividale, Italy, Jan. 29, 1822. At a very early age she played in comedy, but afterward appeared in tragedy. She married the Marquis Capranica del Grillo in 1847, and afterward played in all the chief European capitals and in the United States. In 1884 she visited the United States for the last time.

Ritchie, Mrs. Anna Cora (Mowatt), an American author; born in Bordeaux, France, in 1822. She went in early life to New York. A once popular actress, she retired from the stage in 1854, and devoted herself to the production of romances and dramas with no little success. She died at Henley-on-Thames, England, July 28, 1870.

Rittenhouse, David, an American astronomer; born near Philadelphia, Pa., April 8, 1732. Originally a clock and mathematical instrument maker, he became master of the United States mint, and succeeded Franklin as president of the Ameri-

can Philosophical Society. He was the first to use spider lines in the focus of a transit instrument. He died in Philadelphia, Pa., June 26, 1796.

Ritter, Frederic Louis, an American musician; born in Strasburg, Alsace, in 1834; came to the United States in 1856, and soon made a reputation both here and abroad as a writer on musical topics. He died in Antwerp, Holland, July 6, 1891.

Ritter, Karl, a German geographer; born in Snedlinburg, Prussia, Aug. 7, 1779; studied at Halle, became a private tutor in 1798, and in 1819 succeeded Schlosser as Professor of History at the Frankfort Gymnasium; became Professor extraordinary of Geography at the University of Berlin, where he remained till his death. His great work is "Geography in Its Relations to Nature and History," the first two volumes of which appeared in 1817–1818, but it ultimately comprised upward of 20 volumes. He died in Berlin, Sept. 28, 1859.

Ritual, the name of one of the service books of the Roman Church, in which are contained the prayers and order of ceremonial employed in the administration of certain of the sacraments (communion out of Mass, baptism, penance, marriage, extreme unction) and other priestly offices of the Church, forms for churchings, burials and blessing. In the Anglican Church the "Book of Common Prayer" may be said to contain the ritual.

Ritualism, a strict adherence to rites and ceremonies in public worship. The term is more especially applied to a tendency recently manifested in the Church of England, resulting in a series of changes introduced by various clergymen of the High Church party into the services of the Church. These changes may be described externally as generally in the direction of a more ornate worship, and as to their spirit or animating principle, as the infusion into outward forms of a larger measure of the symbolic element.

River. Water falling on the land in the form of rain, or resulting from melting snow, or rising to the surface in springs, flows over the surface to a lower level. Where two slopes of land dip together the surface drainage collects to form a stream, and when evaporation is not very rapid several such streams ultimately unite and the volume of water they carry flows to the sea or to a salt lake. Small streams are termed rivulets, rills, brooks, becks, or burns; large streams are termed rivers, but the word has no precise reference to the magnitude of the stream to which it is applied.

River Crab, a name given to a genus of crabs inhabiting fresh water, and having the carapace quadrilateral and the antennæ very short.

River Tortoise, a name of a family of tortoises that are aquatic in their habits, coming to shore only to deposit their eggs. They are exclusively carnivorous, subsisting on fishes, reptiles, birds, etc. Well-known species are the soft shelled turtle and the large and fierce snapping turtle of the United States. They inhabit almost every river and lake in the warmer regions in the Old and New Worlds.

Rives, Alfred Landon, an American engineer; born in Paris, France, March 25, 1830; studied at the University of Virginia; was graduated at the Ecole des Ponts et Chaussees, Paris, in 1854; was assistant engineer on the completion of the National Capitol, Washington; engineer in the construction of the aqueduct in Washington; and was in charge of the United States survey for improving the Potomac river. During the Civil War he was colonel of engineers in the Confederate army; was chief engineer of the Cape Cod Canal. Died 1903.

Rives, Amelia, an American novelist; born in Richmond, Va., Aug. 23, 1863. "The Quick and the Dead," was her first success. She became the wife of John A. Chanler in 1888. They were divorced on account of incompatibility. In 1896 she married the son of a Russian Prince, Pierre Troubetskoi, an artist.

Rivet, a short bolt with a flat or rose head, employed for uniting two plates or thin pieces of material. The stub end is swaged to prevent its withdrawal.

Rixey, Presley Marion, an American physician; born in Culpeper co., Va., July 14, 1852; was graduated at the University of Virginia in 1873;

appointed an assistant surgeon in the navy, Jan. 28, 1874. He became the physician of President McKinley and his family; attended Mrs. McKinley in her severe illness in San Francisco in the summer of 1901; and was with the President in Buffalo, N. Y., from the time he was shot, Sept. 6, till his death, Sept. 14, 1901. In accordance with the intention of President McKinley, Dr. Rixey was appointed by President Roosevelt surgeon-general of the navy, with the rank of rear-admiral, Jan. 21, 1902.

Rizal, Jose, a Filipino patriot; born in Catamba, Luzon, in 1861. He was the son of Tagal parents, who destined him for the Church; he was sent to Manila, where he entered the Ateneo Municipal, a school in charge of the Jesuits. In Manila Jose soon learned of the reproach attached to his Tagal origin. He was denied the honors due him as head of his class; and his patriotic poems and speeches met only the derision and hatred of the Spanish students. Though he had been destined for the Church, he studied for and took his medical degree at Manila. Then he went to Paris, Heidelberg, Leipsic, and in all these cities he continued his medical studies. He learned that Europe was almost ignorant of the Philippines, so he wrote a novel, portraying his birthland, which was published in Berlin in 1887. He wrote a sequel to it which was published at Ghent in 1891. In 1887 Rizal went to Hong Kong where he organized the famous Philippine League, which was the source of the "Revolutionary Society of the Sons of the Nation." During several years of travel he constantly agitated Filipino revolt, and then in May, 1892, returned to Manila. He was arrested and exiled to Dopitan, in one of the S. islands. In 1895 he was permitted to return to Luzon. He was, however, arrested at Barcelona and transshipped to Manila, tried and condemned to death. His last wishes, that he might be united by civil marriage with Miss Josephine Bracken, whom he first met in Hong Kong, and who had gone to Manila when his trial begun; and the other that he should be shot through the breast, were granted. He was shot by a detail of native soldiers, Dec. 30, 1896.

Roach, John, an American shipbuilder; born in Mitchelstown, Ireland, in 1815; came to the United States in 1829; he established a foundry in New York city, and erected the Ætna Iron Works, where he built the first compound engines ever made in the United States. In 1871 he purchased the shipyards in Chester, Pa., and under the name of the Delaware River Iron Shipbuilding and Engine Works enlarged them till their value was estimated at $2,000,000. He built the first ships of the new United States navy. He died in New York city, Jan. 10, 1887.

Roads, artificial pathways formed through a country for the accommodation of travelers and the carriage of commodities. Though the Romans set an example as roadbuilders, some of their public highways being yet serviceable, the roads throughout most of Europe were in a wretched condition till toward the end of the 18th century. France was in advance of other countries in road making; in England a decided improvement of the highways only began in the 19th century. Before the time of Macadam it was customary to use broken stones of different sizes to form the roadway, the consequence being that in course of time the smaller stones sank, making the road rough and dangerous. Macadam early in the 19th century introduced the principle of using stones of uniform size from top to bottom. What is known as the rule of the road is that in passing other horsemen or carriages, whether going in the same or the opposite direction, the rider or driver must pass on the left hand of the other rider or driver. Automobiles and bicycles are subject to the same restrictions and are entitled to the same privileges as ordinary vehicles.

Roanoke, a river of the United States, in Virginia and North Carolina. It flows chiefly S. E., and after a course of about 250 miles falls into Albemarle Sound. It is tidal for 75 miles.

Roanoke College, an educational institution in Salem, Va.; founded in 1853, under the auspices of the Lutheran Church.

Roasting, the cooking of meat by the direct action of fire, either before

the fire or in an oven. Roasting before an open fire is considered preferable to roasting in an oven (which is analogous to baking), on account of the free ventilation to which it exposes the meat during the process.

Robbery, the unlawful taking away of money or goods of any value from the person of another, or in his presence, either by violence or by putting him in fear.

Robbia, Luca Della, an Italian sculptor; born in Florence in 1399 or 1400. He designed and executed between 1431 and 1440 10 panels of "Angels and Dancing Boys" for the cathedral. Another great work by him was a bronze door, with 10 panels of figures in relief, for the sacristy of the cathedral, made between 1448 and 1467. He sculptured, in marble, in 1457–1458, the tomb of Federighi, Bishop of Fiesole. His name is closely associated with the production of figures in glazed or enamelled terra-cotta, made by a process which, though he did not invent it, he yet perfected greatly. He died in Florence, Feb. 20, 1842. His principal pupil was his nephew Andrea (1435–1525), who worked chiefly at the production of enamelled reliefs, retables, and medallions, these last for the most part productions of the "Madonna and Child." His son Giovanni (1469–1529?) continued the activity of the family in this style of work; his best productions are the frieze, representing the "Seven Works of Mercy," outside a hospital at Pistoja.

Robbins, Francis Le Baron, an American clergyman; born in Camillus, N. Y., May 2, 1830; was graduated at Williams College in 1854; held pastorates in Philadelphia for 25 years; founded the Oxford Presbyterian and Beacon Churches, the latter an institutional church among the working class of the Kensington district of Philadelphia.

Robert, Duke of Normandy, surnamed the Devil; the younger son of Duke Richard II. by his marriage with Judith, a daughter of Count Godfrey of Brittany. In 1027 he succeeded his elder brother, Richard III. The first years of his government were employed in bringing his rebellious vassals into subjection. In 1034 his fleet was wrecked off Jersey while on its way to England to support his nephews Alfred and Edward against Canute. He concluded a truce with Canute, by which the two princes were promised half of England. In 1033 he set out to visit the holy places, and subsequently made the pilgrimage to Jerusalem on foot. While returning he died suddenly in Nicæa in Asia Minor (1035). William the Conqueror was his son.

Robert II., King of Scotland; born in Scotland, March 2, 1316; the son of Marjory, daughter of Robert Bruce, and of Walter, steward of Scotland, and was thus the first of the Stewart or Stuart kings. He was recognized by Parliament in 1318 as heir to the crown. On the death of David II. he was crowned at Scone, March 26, 1371. An act of Parliament in 1375 settled the crown on his sons by his first wife Elizabeth Mure of Rowallan, illegitimate by ecclesiastical law. His reign was comparatively a peaceful one, one of the chief events being the battle of Otterburn. Died in Dundonald Castle, May 13, 1390.

Robert III., King of Scotland, eldest son of the preceding; born in 1340 and was originally called John, but changed his name on his coronation in 1390. He trusted the management of affairs almost entirely to his brother, whom he created Duke of Albany. In 1398 Albany was compelled to resign his office by a party who wished to confer it on the king's eldest son, David, Duke of Rothesay. War was renewed with England, and the battle of Homildon Hill, Sept. 14, 1402, resulted in a disastrous defeat of the Scotch. In this year the Duke of Rothesay died in Falkland Castle, where he had been imprisoned. Dread of Albany, who had recovered the regency, induced the king to send his second son, James, to France in 1406; but the vessel which carried him was captured by the English, and Henry IV. long detained him as a prisoner. Soon after this event Robert died in Rothesay, Bute, in 1406.

Robert, Henry Martyn, an American military engineer; born in Robertsville, S. C., May 2, 1837; was graduated at the United States Mili-

Doubleday, Page & Co., of New York.

tary Academy in 1857; served on frontier duty in 1858–1861; was on the staff of General McClellan and on duty as engineer during the Civil War; was promoted captain in 1863. He is the author of the well-known "Robert's Rules of Order" (1876).

Robert of Gloucester, an English chronicler, living at the time of the battle of Evesham (1265). He is remarkable for a metrical chronicle of England, from the time of the fabulous Brutus to his own, based chiefly upon Goeffrey of Monmouth's book. It extends to 10,000 lines, and is one of the earliest epics of the English language.

Roberts, Brigham Henry, an American journalist; born in Warrington, Lancashire, England, March 13, 1857. In the summer of 1866 he emigrated with his parents to Davis co., Ut.; attended the University of Utah. Soon after his graduation he was called by the Mormon Church to its missionary service. After laboring for some years as a missionary he was elected to a high office in the Church. He also engaged in journalism and was for a time editor-in-chief of the Salt Lake "Herald." In 1898 he was elected to Congress by a large majority. His election created widespread agitation throughout the country, and on Jan. 25, 1900, the House of Representatives by an overwhelming majority voted to exclude him as constitutionally ineligible, as a polygamist, to a seat in that body.

Roberts, Charles George Douglas, a Canadian poet; born in Douglas, N. B., Jan. 10, 1860. He was an earnest advocate of Canadian nationalism, and such of his poetical compositions as relate to this and other Canadian subjects are excellent.

Roberts, Ellis Henry, an American financier; born in Utica, N. Y., Sept. 30, 1827; was graduated at Yale University in 1850. He was assistant treasurer of the United States in 1889–1893, and became treasurer of the United States in 1897.

Roberts, Frederick, Lord, an English military officer; born in Cawnpur, India, Sept. 30, 1832. He was brought to England when two years old, educated at Clifton, Eton, Sandhurst, and Addiscombe, and entered the Bengal Artillery in 1851. His first taste of actual warfare was in the hot time of the siege of Delhi, during the mutiny, and he took an active part in the subsequent operations down to the relief of Lucknow. He discharged the duties of assistant quartermaster-general in the Abyssinian expedition of 1868, and in the Lushai expedition of 1871–1872. On the outbreak of the Afghan war in 1878, Roberts, now Major-General, was appointed to command the Kurram division of the army. He forced in brilliant fashion the Afghan position on the peak of Peiwar Kotul (8,500 feet above sea-level). After the murder of Sir Louis Cavagnari and the escort of the British mission at Kabul, he was given command of the force sent to avenge them. He defeated the Afghans at Charasia on Oct. 6, took possession of Kabul on the 12th, and assumed the government of the country. On Aug. 9, Sir F. Roberts set out on his memorable march through the heart of Afghanistan to the relief of Kandahar, which he reached three weeks later. He immediately gave battle to Ayub Khan and routed him completely, capturing all his artillery and his camp; was appointed Commander-in-Chief of the Madras army (1881), and held the rank of Commander-in-Chief in India 1885–1893. He was appointed Commander-in-Chief of the forces in Ireland in 1895; and in 1899 took command of the English forces in South Africa; capturing Cronje, relieving Kimberly, and annexing the two republics. He returned to England and was made Commander-in-Chief to succeed Lord Wolseley.

Roberts, (Henry) Chalmers, an American journalist; born in Austin, Tex., July 31, 1870; was educated at private schools, and studied law at the University of Texas. After leaving college he engaged in journalism; went to the seat of the Turko-Grecian war as a correspondent of the London "Daily News," and in the Spanish-American War was correspondent for the Brooklyn "Eagle," and the London "Daily Mail." He traveled in Egypt for Harpers, and is now literary agent in London for Doubleday, Page & Co., publishers.

Robertson, William, a Scotch historian; born in Borthwick, Scotland, Sept. 19, 1721. Having completed his theological studies at Edinburgh, he obtained a license to preach and in 1743 was presented to the living of Gladsmuir, in East Lothian. He soon became distinguished by his eloquence as a preacher; but it was not till 1759 that, by his "History of Scotland," he acquired a place among British classical writers. The distinction he acquired by this work, which reached a 14th edition before his death, appeared in his successive preferments. He became King's chaplain in 1761, principal of the University of Edinburgh in 1762, and Historiographer-Royal of Scotland in 1764. He died near Edinburgh, June 11, 1793.

Robertson, William H., an American lawyer; born in Bedford, N. Y., Oct. 10, 1823. During the Civil War he rendered efficient service in raising and organizing State troops for the Union armies. He was a member of Congress in 1867–1869 was reëlected to the New York State Senate in 1872; and was appointed collector of the port of New York in 1881. His nomination to this office by President Garfield without consultation with the senators from New York, Roscoe Conkling and Thomas C. Platt, led to their resignation and to the defection of the "Stalwart" wing of the Republican party. He died in Katonah, N. Y., Dec. 6, 1898.

Robeson, George Maxwell, an American lawyer; born in Belvidere, N. J., in 1829; was graduated at Princeton University in 1847; studied law; was admitted to the bar in 1850, and in 1867 became attorney-general of New Jersey. He was appointed Secretary of the Navy in 1869; served for a short time as Secretary of War on the resignation of General Belknap in 1867; and was elected to Congress in 1878 and 1880. After retiring from Congress, he practised law in Trenton, N. J., where he died, Sept. 27, 1897.

Robeson, Henry Bellows, an American naval officer; born in New Haven, Conn., Aug. 5, 1842; was graduated at the United States Naval Academy in 1860; served through the Civil War; participated in the action against the defenses of Charleston, S. C., April 7, 1863, and on July 10 of the same year led the landing party from the "New Ironsides" in an attack on and capture of the Confederate works on Morris Island; took part in both attacks on Fort Fisher; was promoted captain in 1887; commodore in 1898; and rear-admiral in 1899; and was retired in the latter year.

Robespierre, Maximilien Marie Isidore, a French revolutionist; born of a family of Irish origin, in Arras, May 6, 1758. Maximilien early showed unusual promise, and was educated at Arras and at the College Louis-le-Grand at Paris, where Camille Desmoulins was a fellow student. He was admitted avocat in 1781, and next year was named criminal judge by the Bishop of Arras, but resigned his place soon after to avoid passing a sentence of death. He drew up the cahier or list of grievances for the guild of cobblers, and was elected to the States-General in 1789 as one of the deputies for the tiers etat of Artois.

Three days after the death of Mirabeau he called on the Assembly to prevent any deputy from taking office as minister for four years, and in the following month (May, 1791) carried the motion that no member of the present Assembly should be eligible for the next. Next followed Robespierre's appointment as public accuser, the king's flight to Varennes (June 21), Lafayette's last effort to control the sacred right of Insurrection on the Champ-de-Mars (July 17), the abject terror of Robespierre, his sheltering himself in the house of Duplay, a carpenter, his hysterical appeal to the club, the theatrical oath taken by every member to defend his life, and his being crowned with chaplets, along with Petion, and carried home in triumph by the mob at the close of the Constituent Assembly, Sept. 30. After seven weeks of quiet he sold his small patrimony and returned to Paris, to the house of Duplay, where he remained till the last day of his life.

Meantime the Girondist party had been formed in the new Legislative Assembly, its leaders — the loudest, Brissot — eager for war. Robespierre, who ever feared and disliked war, of-

fered a strenuous opposition in the debates of the Jacobin Club, and sometimes, if seldom, in his endless and windy harangues rose into the region of real eloquence. In April, 1792, he resigned his post of public prosecutor. He was invisible during the crisis of Aug. 10, but joined the Hotel-de-Ville faction, and on Aug. 16 he presented to the Legislative Assembly its petition for a Revolutionary Tribunal and a new Convention. It does not appear, however, that he was in any sense directly responsible for the atrocious September massacres in the prisons, or more than a mere accessory after the fact. For his reward he was elected first deputy for Paris to the National Convention, which opened on Sept. 21.

The bitter attacks on him by the Girondists were renewed only to throw Robespierre into a closer union with Danton and his party, but the final struggle was interrupted for a little by the momentous question of the king's trial. Robespierre opposed vigorously the Girondist idea of a special appeal to the people on the king's death, and his execution (Jan. 21, 1793) opened up the final stage of the struggle, which ended in a complete triumph of the Jacobins on June 2 of the same year. The first Committee of Public Safety — a permanent Cabinet of Revolution — was decreed in April, 1793, but Robespierre was not elected till July 27.

He was now for the first time one of the actual rulers of France, but it is open to question whether for the whole 12 months from this time to the end he was not merely the stalking horse for the more resolute party within the Twelve. He was astute enough, moreover, to play off one force against another — the Convention, the Commune, and the Committee, while he derived his strength from the constant worship of the club.

The next scenes in the dark drama of the Revolution were the dark intrigues and desperate struggles that sent Hebert and his friends to the scaffold on March 24, 1794, and Danton and Robespierre's school fellow, Camille Desmoulins, on April 5, after. The next three months he reigned supreme, but his supremacy prepared the way for his inevitable fall. He nominated all the members of the government committee, placed his creatures in all places of influence in the commune of Paris, sent his henchman Saint-Just on a mission to the armies on the frontier, assumed supreme control of the Revolutionary Tribunal, and completely revolutionized its method of operation by the atrocious measure introduced by his creature Couthon on the 22d Prairial (June 10), to the effect that neither counsel nor witnesses need be heard if the jury had come otherwise to a conclusion. The fatal significance of this change — a complete abrogation of all laws — is seen in the fact that from this time till the day of Robespierre's death the daily tale of victims of the guillotine averaged almost 30.

Meantime a party in the Convention was formed against Robespierre, and on July 27th he was openly accused of despotism. A decree of arrest was carried against him and he was thrown into Luxembourg prison. He was released by his keeper on the night of the same day and conducted to the Hall of Commune where his supporters were collected. On the following day Barras was sent with an armed force to effect his arrest. Robespierre's followers deserted him and he was guillotined July 27, 1794, together with some 23 of his supporters.

Robin, American, or **Migrating Thrush,** specific character, dark-ash color; beneath, brownish-red; head and tail black; the two exterior feathers of the latter white at the inner tip. The robin is found in summer throughout North America from Alaska to Mexico. They retire from higher latitudes only as their food begins to fail, or till driven S. by inundating snows. During the winter months they are numerous in the Southern States.

Robin Hood, the hero of a group of old English ballads, represented as an outlaw and a robber, but of a gallant and generous nature, whose familiar haunts are the forests of Sherwood and Barnsdale, where he fleets the time carelessly in the merry greenwood. He is ever genial and good-natured, religious, respectful to the Virgin and to all women for her sake, with a kind of gracious and noble dignity in his bearing. He lives by the king's deer, though personally most

loyal, and wages ceaseless warfare on all proud bishops, abbots, and knights, taking of their superfluity, and giving liberally to the poor and to all honest men in distress, of whatever degree. He is unrivalled with the bow and quarterstaff; but in as many as eight of the extant ballads comes off the worse in the combat with some stout fellow, whom he thereupon induces to join his company. His chief comrades are Little John, Scathlok (Scarlet), and Much; to these the "Gest" adds Gilbert of the White Hand and Reynold. A stalwart curtal friar, called Friar Tuck in the title, though not in the ballad, fights with Robin Hood, and apparently accepts the invitation to join his company, as he appears later in two broadsides which also mention Maid Marian. Such is the romantic figure of the greatest of English popular heroes — a kind of yeoman counterpart to the knightly Arthur, who is the hero of Tennyson. There is no evidence worth anything that Robin Hood was ever more than a mere creation of the popular imagination.

Robins, Benjamin, an English mathematician, the father of the military art of gunnery; born in Bath, England, in 1707, of a poor Quaker family. Having obtained a little instruction in mathematics, he prosecuted this branch of science with great zest, and, having removed to London, set up for a teacher of mathematics, and published several mathematical treatises which gained for him considerable reputation. Robins next commenced his great series of experiments on the resisting force of the air to projectiles, varying his labors by the study of fortification, and invented the ballistic pendulum. His great and valuable work, the "New Principles of Gunnery," on the preparation of which he had spent an enormous amount of labor, appeared in 1742, and produced a complete revolution in the art of gunnery. He died July 29, 1751.

Robinson, Charles Seymour, an American clergyman; born in Bennington, Vt., March 31, 1829. He is famed as a collector of hymns and tunes used in the Presbyterian Church. His publications include "Songs of the Church"; "Laudes Domini"; and others. Died 1899.

Robinson, Edward, an American philologist; born in Southington, Conn., April 10, 1794; was graduated at Hamilton College in 1816. In 1830 he became Professor of Sacred Literature at Andover, in 1837 Professor of Biblical Literature in the Union Theological Seminary, New York. He then made an extensive survey of Palestine, collecting materials for "Biblical Researches in Palestine and Adjacent Countries" (1841). A second visit in 1852 yielded fruit for its second edition (1856). He died in New York city, Jan. 27, 1863.

Robinson, Stillman Williams, an American inventor; born in Reading, Vt., March 6, 1838; was graduated at the University of Michigan in 1863; Professor of Mechanical Engineering at the University of Illinois in 1870–1880, and at the Ohio State University in 1878–1894. He resigned in the latter year to care for his inventions. He was the inventor of a thermometer-graduating machine; machines for shoe manufacturing, etc., and published "Teeth of Great Wheels and the Robinson Templet Odontograph"; "Railroad Economics"; "Principles of Mechanism"; etc.

Robinson Crusoe, Alexander Selkirk, who was found in the desert island of Juan Fernandez, where he had been left by Captain Stradling. He remained on the island four years and four months, when he was rescued by Captain Rogers and taken to England.

Rob Roy (Gaelic, "Red Robert"), the Scotch Robin Hood; born in 1671; second son of Lieut.-Col. Donald Macgregor of Glengyle. In consequence of losses incurred about 1712 in unsuccessful speculations in cattle, for which he had borrowed money from the Duke of Montrose, his lands were seized, his houses plundered, and his wife shamefully used, turned adrift with his children in midwinter. Maddened by these misfortunes, Rob Roy gathered his clansmen and made open war on the duke, sweeping away the whole cattle of a district, and kidnaping his factor with rents to the value of more than $15,000. Marvellous stories are current round Loch Katrine and Loch Lomond (where a cave near Inversnaid still bears his name) of

his hairbreadth escapes from capture, of his evasions when captured, and of his generosity to the poor, whose wants he supplied at the expense of the rich. They in turn gave him timely warning of the designs of his two arch-foes, the Dukes of Montrose and Athole, and of the red-coats they called to their aid from Dumbarton and Stirling; besides, Rob Roy enjoyed the protection of the Duke of Argyll, having assumed the name Campbell, his mother's. Late in life he is said to have turned Catholic, but in the list of subscribers to the Episcopalian Church history of Bishop Keith occurs the name "Robert Macgregor alias Rob Roy." The history came out in 1734, and on Dec. 28 of that year Rob Roy died in his own house at Balquhidder. He left five sons, two of whom died in 1734 — James, an outlaw, in Paris; and Robin, the youngest, on the gallows at Edinburgh for abduction.

Roc, or **Rukh,** a fabulous bird of immense size, mentioned in the "Arabian Night's Entertainments."

Rochambeau, Jean Baptiste Donatien de Vimeur, Count de, a Marshal of France; born in Vendome, France, July 1, 1725; entered the French army in 1742, distinguished himself in the Seven Years' War, and became Field-Marshal in 1761. In 1780–1782 he commanded the French forces sent to aid the revolted British colonists in America. He became governor of Artois and Picardy, and subsequently of Alsace, was made a Marshal in 1790, and commanded the Army of the North in 1792. During the Reign of Terror he narrowly escaped the guillotine. He died in Thori, May 10, 1807.

Roche, James Jeffrey, an American author; born in Queen's County, Ireland, May 31, 1847. He went to Boston in 1866 and became in 1890 an editor of the "Pilot," and published: "Songs and Satires"; "Ballads of Blue Water"; etc.

Rochelle Salt, the popular name of the tartrate of soda and potash, this salt having been discovered in 1672 by a Rochelle apothecary named Seignette. It occurs, when pure, in colorless transparent prisms, generally eight sided; and in taste it resembles common salt. This salt is a mild and efficient laxative.

Rochester, a city and county-seat of Monroe co., N. Y.; on the Genesee river, 229 miles W. of Albany. In the center of the city are the Upper Falls of the Genesee, a perpendicular cataract of 96 feet. Rochester is built on a plateau on both sides of the river, 263 feet above Lake Ontario.

The city is the trade center of a large and rich agricultural region. In the Genesee river there are three falls, 96, 26 and 83 feet respectively, giving abundant waterpower for manufacturing. There are over 1,900 industrial establishments, employing upward of 40,000 persons, with a combined capital of about $50,000,000, and an output of about $70,000,000. The most important of these are flour mills, with a combined output valued at nearly $5,000,000; the largest carriage and wagon factory in the United States, and manufactories of steam engines, agricultural machinery, lamps, stoves, glassware, perfumery, india-rubber goods, photographic materials, cigarettes, shoes, etc. In the suburbs is an extensive nursery, including two great plants for the packing and shipment of garden and farm seeds.

Rochester is the seat of the University of Rochester, and the Rochester Theological Seminary. The most remarkable structure in the city and county is the aqueduct which carries the Erie canal across the Genesee river. It is of cut stone, 848 feet long, with a channel 45 feet wide, and is supported by nine arches. Pop. (1890) 133,896; (1900) 162,608.

Rochester, University of, a co-educational institution in Rochester, N. Y.; founded in 1850 under the auspices of the Baptist Church.

Rock, any portion of the earth's crust, coherent or incoherent, any sedimentary stratum or any dyke or overlying mass of volcanic or plutonic mineral matter. The older writers drew a distinction between rocks and soils. Both are now regarded as rocks. So are blown sand, silt, mold, and peat; though the last is soft, spongy, and of vegetable origin. Most rocks, originally soft, have become hard and

compact by losing their moisture and being subjected to pressure. As a rule a rock is not a bed of some simple mineral. In most cases there are crystals cemented together by imperfectly crystalline or amorphous matter, or there is a mixture of angular and rounded grains, bound by minerals.

Rock Cod, a cod caught on a rocky sea bottom. They are considered to be of better flavor than fish from a sandy bottom.

Rockefeller, John Davidson, an American capitalist; born in Richford, Tioga co., N. Y., July 8, 1839. He engaged in business when he was 19, and soon showed ability in detail and discretion in management. When discoveries of petroleum roused speculative interest in 1860, he owned a refinery in Cleveland, O. He was quick to perceive that his opportunities were at hand. His business developed and enlarged with amazing rapidity. In 1870 he became president of the Standard Oil Company, a monopolistic corporation, and through which he accumulated immense wealth. He made large donations to educational institutions, notably to the University of Chicago, to which he has given several millions of dollars. He has also made large contributions to religious and charitable purposes. He is believed to be the richest man in America.

Rocket, a cylindrical case of pasteboard or metal, attached to one extremity of a light wooden rod, and containing a composition which, being fired, shoots the whole of the arrangement through the air, by that principle that an unbalanced reaction from the heated gases which issue from openings in fireworks gives them motion in the opposite direction.

Rocket (Brassica eruca), a cruciferous plant of the cabbage genus growing wild in many parts of Europe. It has a strong, disagreeable odor, an acrid and pungent taste, but is much esteemed by some.

Rockhill, William Woodville, an American diplomatist; born in Philadelphia, Pa., in 1854; entered the diplomatic service in 1884 as second secretary of legation at Peking, China; was appointed first assistant secretary of State in 1896. He was appointed director of the Bureau of American Republics in May, 1890. After the rescue of the foreign diplomats in Peking in 1900, and United States Minister Conger was granted leave of absence, Mr. Rockhill was appointed a special ambassador to conclude peace negotiations.

Rocking Stones, or Logans, large masses of rock so finely poised as to move backward and forward with the slightest impulse. They occur in nearly every country. Some of them appear to be natural, others artificial; the latter seem to have

ROCKING STONE OF TANDIL.

been formed by cutting away a mass of rock round the center-point of its base. The former are chiefly granitic rocks, in which felspar is abundantly present. Various explanations have been given of the uses of these singular objects. They are supposed to have been used in very early times for purposes of divination, the number of vibrations determining the oracle; hence it came to be believed that sanctity was acquired by walking round them. The famous rocking stone of Tandil in the Argentine Republic, 250 miles S. of Buenos Ayres, weighs over 700 tons, yet is so nicely poised that it rocks in the wind and may be made to crack a walnut.

Rock Island, a city in Rock Island co., Ill.; on the Mississippi river. The city derives its name from a beautiful island in the river, which belongs to the United States, and is used by the Federal government for a great central arsenal, a large armory and

foundry, military headquarters, etc. Before and during the Black Hawk War there were block-house forts on this island, and during the Civil War the prison here was the place of detention of many Confederate prisoners.

Rock of Chickamauga, a name applied to Gen. George H. Thomas, U. S. A., on account of his heroic stubbornness in holding his position at Chickamauga during the Civil War, in September, 1863.

Rock Pigeon, a pigeon that builds its nest in hollows or crevices of rocks and cliffs.

Rock Salt, common salt, or chloride of sodium, occurring as a mineral and in a solid form. It is a very extensively-diffused mineral, and in some places forms great rock and even mountain masses.

Rock Scorpion (Buthus or Scorpio afer), a species of scorpion found in Africa, averaging about six inches in length. The bite of this animal, though not absolutely fatal, is yet considered to be dangerous.

Rock Snake, a name sometimes given to any individual of the genus Python. Rock snakes are among the largest of living reptiles; specimens of 18 and 20 feet long have been brought to the United States. They kill their prey by constriction, and swallow it whole, commencing with the head. During the digestion the animal is lazy and unwilling even to defend itself when attacked.

Rocky Mountains, The, a chain of mountains in the central and W. portions of the North American continent, are a prolongation of the great Mexican Cordillera, extending from the N. frontier of Mexico N. in several ranges, one of which, the E., passing through British North America, reaches the Arctic Ocean in about lat. 70° N.; while the W., passing near the Pacific coast, terminates near Prince William's Sound, in about lat. 60° N. The territory occupied extends from the Californian shores of the Pacific to about lon. 105° W. The whole area properly included by the mountains and their intervening valleys in the country belonging to the United States is estimated at about 980,000 square miles. The mountainous belt of Eastern New Mexico and Colorado has a general N. and S. direction. On its E. margin stands Pike's Peak, while in Colorado and Nebraska are those portions of the chain known as the Three Parks, and the Medicine Bow Mountains. From Long's Peak, in about lat. 40°, the range trends N. W., connecting with the Wind River Mountains, which latter includes Fremont's Peak, 13,870 feet above sea-level. Beyond that peak to the N. boundary of the United States the range separates the Dakotas and Washington, and the pass known as Lewis and Clark's, in lat. 47°, is the most N. pass of its system in the Union. In British North America the "Rockies" divide the waters of the Pacific from those which flow into Hudson Bay. The next great range of this mountain system toward the W. is that called the Wahsatch Mountains, lying S. from Great Salt Lake, and toward the N. W. this region is traced along the W. bank of the Colorado toward the Sierra Nevada, which forms the E. boundary of California, and the watershed of the Colorado, and Lewis' Fork of the Columbia river, in lat. 37° and 46° respectively. Nearly the whole area between these points, and for a breadth of about 10 degrees of longitude, stretching E. from the Sierra Nevada, is a vast and partially explored territory, from 4,000 to 5,000 feet above sea-level. In British America this section of the chain interlocks with the main trunk of the Rocky Mountains. The W. portion of the chain commences at the S. extremity of the Lower California peninsula, then passing through California it bifurcates into two ranges, known, respectively, as the Sierra Nevada, at a distance of about 160 miles from the coast, and the Coast Range, skirting the shores of the Pacific from 10 to 50 miles inland, till it reconnects with the Sierra Nevada in Northern California, in which section Mount Shasta attains an altitude of about 14,000 feet above tide water. Throughout all of Oregon and Washington, the distinction is still maintained between the main range, here called the Cascade Mountains, and the Coast Range. The latter traverses the central portion of Vancouver Island for its whole length, and on the mainland in British

Columbia the Sierra Nevada proceeds N. and is crossed by Fraser river. Several depressions are met with, which serve as passes for the routes from Sonora, Sacramento, and Marysville to the E. by the canyon of Carson river, the range is crossed at an elevation of about 7,250 feet; and by the Truckee Pass the elevation is about 6,000 feet. From these passes the route is N. E. to the main road which crosses the Sierra Nevada in the N. portion of California, and which E. passes by the Humboldt Mountains to Salt Lake City. To the E. of Salt Lake this route continues across the Wahsatch range to the great South Pass of the Wind River Mountains, immediately S. of Fremont's Peak, and thence down the Sweetwater to the N. fork of the Platte. A more S. route connects Pike's Peak with the Utah basin, and thence turning S. W. crosses the Sierra Nevada near its junction with the Coast Range in Northern California, meeting at this point the route from Santa Fe through New Mexico, and the still more S. one from Texas, which follows the valley of the Gila, and crosses that river and the Colorado at their junction. Mount St. Elias, in Alaska, is one of the highest peaks of this extensively ramified mountain system, though surpassed in height by the neighboring Mount McKinley.

Rocky Mountain Goat, a beautiful animal of the antelope family, which inhabits the heights of the Rocky Mountains between the forests and the snow line, from the 44th to the 65th degree of latitude. It is about the size of a goat, but is handsomer and more thickset, and has stronger legs. It is completely covered with long, thick, white hair.

Rod, called also a pole, or perch, a measure of length, equivalent to 5½ yards, or 16½ feet. The square rod, called generally a rood, is employed in estimating masonry work, and contains $16\frac{1}{2} \times 16\frac{1}{2}$, or $272\frac{1}{4}$ square feet.

Rodentia, or **Rodents,** an order of mammiferous quadrupeds occupying in many respects an intermediate place between the purely carnivorous and purely herbivorous mammalia, and so forming the connecting link between them. The order embraces rats and mice, hares, rabbits, guinea pigs, and other well-known animals. In the greater part of the details of their organization the inferiority of the animals is displayed; but some of them enjoy a certain dexterity, using their forefeet for carrying their food to their mouth; while others again (the squirrels) climb trees with facility. Rodents are most abundant in temperate regions. They are found in all parts of the world.

Roderic, "the last of the Goths," whose tragic death, coincident with the downfall of the Visigothic monarchy in Spain, has inspired poets and romancers, to throw round him a halo of glory. According to the common legend he was the son of a noble who was blinded by King Witiza. A conspiracy having been formed against Witiza, Roderic was elevated to the throne (710). The sons of Witiza bided their time. At length certain nobles were engaged in a plot to dethrone Roderic by Count Julian, the governor of Ceuta (in North Africa). Julian brought with him a Moorish chief named Tarik at the head of 12,000 men. Roderic met the invading army on the banks of the Guadelete, on July 26, 711. The battle raged six days; but the sons of Witiza, deserted during the contest, and the rout of the Visigoths was complete. Roderic either died on the field or was drowned in the Guadalete.

Rodgers, Christopher Raymond Perry, an American naval officer; born in Brooklyn, N. Y., Nov. 14, 1819. In 1833 he entered the United States navy as a midshipman; was in active service during the Seminole and Mexican Wars; and in 1861 became commander. He commanded, in 1862, an expedition to St. Augustine and up the St. Mary's river. In the attack on the defenses of Charleston, April 7, 1863, he was fleet-captain on the "New Ironsides." He was appointed superintendent of the United States Naval Academy in 1874, 1877, and 1881, and in the same year was promoted rear-admiral. He was retired in 1881; and died in Washington, D. C., Jan. 8, 1892.

Rodgers, John, an American naval officer; born in Harford co., Md., July

11, 1771. He was a captain in the merchant service by 1789, and in 1798 entered the navy as lieutenant, becoming captain the year after. In 1805 he extorted from Tripoli and Tunis treaties abolishing the former tribute and forbidding the slavery of Christian captives. On June 23, 1812, he fired with his own hand the first shot in the war with Great Britain. He died Aug. 1, 1838.

Rodgers, John, an American naval officer; born in Maryland, Aug. 8, 1812. He entered the naval service in 1825, and soon showed that he had inherited the bravery of his father, Commodore John Rodgers. He was in the war against the Seminole Indians, and rendered excellent service during the Civil War. He was promoted rear-admiral in 1871, and in 1877–1882 was superintendent of the United States Naval Observatory. He died in Washington, D. C., May 5, 1882.

Rodman, Isaac Peace, an American military officer; born in South Kingston, R. I., Aug. 18, 1822. He entered the Union army; was captain in 1861, and the same year led his company in the battle at Bull Run, July 21. He was soon promoted to colonel and was at the capture of Roanoke Island and at Newbern, N. C. In 1862 he was promoted Brigadier-General of volunteers. He commanded a division at Fredericksburg. In 1862 he was engaged in the battle of Antietam, where he received a wound from which he died in Sharpsburg, Md., Sept. 30, 1862.

Rodman, Thomas Jefferson, an American military officer; born in Salem, Ind., July 30, 1815. He became famous as the inventor of the cannon bearing his name. He died in Rock Island, Ill., June 7, 1871.

Rodney, Cæsar, an American patriot; born in Dover, Del., Oct. 7, 1728. In 1765 he was a delegate to the Stamp Act Congress in New York. In 1767, when the tea act was proposed in the British Parliament, the Delaware Assembly appointed him to aid in the formulation of an address of remonstrance to the king. In 1775 he was elected for a second time to the Continental Congress, and in May of that year became Brigadier-General of the Delaware militia. He served with distinction during the Revolutionary War, becoming a Major-General. He was elected president of Delaware, in which office he served till 1782, when he was reëlected to Congress, but did not take his seat because of illness. He died in Dover, Del., June 29, 1784.

Roe (Capreolus caprea), a small species of deer inhabiting Europe and some parts of Western Asia. It was

ROEBUCK.

once plentiful in Wales and in the hilly parts of England, as well as in the S. of Scotland, but is now very rare.

Roe, Azel Stevens, an American novelist; born in New York city, Aug. 16, 1798. He left the wine business for the production of literature, attaining considerable success. He died in East Windsor Hill, Conn., Jan. 1, 1886.

Roe, Charles Francis, an American military officer; born in New York city, May 1, 1848; was graduated at the United States Military Academy in 1868, and was assigned to the 1st Cavalry, then on the Pacific slope. He was post-adjutant at Camp Harney, Or., under the late Major Elmer. He was mustered out with the 2d Cavalry in 1870, but was reappointed. In January, 1888, he returned to New York, and the following year was made captain of the newly organized Troop A. In 1898 he was appointed a Brigadier-General of United States volunteers. He died in 1900.

Roe, Edward Payson, an American novelist; born in Orange co., N. Y., March 7, 1838. He wrote a great

number of very popular novels, which were republished in England and other countries. He died in Cornwall, N. Y., July 19, 1888.

Roe, Edward Thomas, an American lawyer; born in Shawneetown, Ill., Nov. 28, 1847; was educated at the Illinois Wesleyan University and the University of Albany; began the practice of law at Bloomington, Ill., in 1870; appointed assistant to the United States attorney for the Southern District of Illinois in 1871, and served in that capacity and as United States district attorney for 16 years.

Roe, Francis Asbury, an American naval officer; born in Elmira, N. Y., Oct. 4, 1823; appointed an acting midshipman, Oct. 19, 1841; ordered to the sloop-of-war "John Adams," and served a full cruise; on the breaking out of the Civil War he was ordered to the "Pensacola," was executive officer of that ship at its memorable passage down the Potomac river, through 9 miles of batteries, under constant fire. He took the "Pensacola" to New Orleans, led the starboard (van) column of Farragut's fleet at the battle and passage of Forts Jackson and St. Philip, and 80 miles above the Chalmette Forts. He was detached from the "Pensacola," at New Orleans, Aug. 5, 1862, and ordered to command the gunboat "Katahdin," and the same day fought the battle of Baton Rouge. He was promoted lieutenant-commander, Aug. 6, 1862. Subsequently he was ordered to the Sounds of North Carolina. Roe was promoted captain April 1, 1872, and rear-admiral, Nov. 3, 1884, and was retired Oct. 4, 1885. He died in Washington, D. C., Dec. 28, 1901.

Roebling, John Augustus, an American engineer; born in Muhlhausen, Prussia, June 12, 1806; came to the United States in 1831, and settled in Pittsburg, Pa. He was invited to make plans and estimates for building a suspension bridge across the chasm of the Niagara river to unite the New York Central and Great Western (Canada) railroads. He secured the contract and in four years the first locomotive and train crossed the bridge, in March, 1855. His greatest work was the bridge over the East river, connecting New York and Brooklyn. He died while the construction was in progress, in Brooklyn, July 22, 1869, and the bridge was completed by his son.

Roebling, Washington Augustus, an American civil engineer; born in Saxenburg, Pa., May 26, 1837; son of the preceding. He was graduated at the Rensselaer Polytechnic Institute, Troy, N. Y., in 1857; was an engineer officer during the Civil War and attained the rank of colonel of volunteers. In 1865 he resigned from military service to become assistant to his father. In 1869 he was assistant engineer under his father in the construction of the suspension bridge over the East river; and on his father's death became chief engineer, which post he held till the completion of the bridge in 1883. He then became superintendent of the large wire manufactory at Trenton, N. J.

Roentgen, William Conrad, Baron, a German scientist; born in Holland in 1845; was graduated in medicine at the University of Zurich in 1870. On Nov. 8, 1895, he made the discovery of what has since been known as the Roentgen, or X-rays.

Roentgen, or Rontgen, Rays, certain invisible non-refractable rays emanating from the surface of an electrically excited vacuum tube opposite the cathode electrode, having power (1) of permeating objects impervious to light or heat rays, (2) of discharging electrified bodies or surfaces exposed to them, (3) of exciting fluorescence in fluorescent salts, and (4) of affecting sensitized photographic plates in a manner similar to light rays. They were discovered by William Conrad Roentgen, Professor of Physics at the Royal University of Wurzburg, in Germany, toward the close of the year 1895. Not being certain as to the nature of the rays, Professor Roentgen provisionally termed them the X-rays. Besides obtaining radiographs of the bones in the living human hand, Professor Roentgen radiographed a compass card completely inclosed in a metallic box. Subsequent experiments have established the fact that the transparency of a body to the X-rays is proportional to its density. As to the real nature of the X-rays eminent physicists differ, but all

agree that they must be regarded as of a nature essentially different from ordinary light.

The Roentgen rays pass very freely through the various tissues and fluids of the body, but are obstructed by the bones; hence it is possible to take a perfect shadow-picture, or radiograph, as it is now generally called, of the bones of a living person or animal. By far the most important result of the discovery has been the application of the new rays to surgery. Radiographs of bones fractured, splintered, or diseased, have been of much practical use in aiding diagnosis and treatment. Needles, bullets and other foreign objects in various parts of the body have been successfully located, and the invention of the fluoroscope has made it possible to use the Roentgen rays, not only in surgical cases, in searching for fractures, etc., but to undertake anatomical studies and make the diagnosis of internal diseases. The full physiological effects of of the X-rays are not yet clearly understood.

A very interesting and practical application of the rays was made at Pittsburg, Pa., early in March, 1897. By means of a very powerful X-ray apparatus, designed by Prof. Reginald A. Fessenden of the Western University of Pittsburg, tests were made that prove that blow holes in heavy armor can be detected by the aid of radiography.

Rogation Days, the Monday, Tuesday, and Wednesday before Holy Thursday or Ascension Day, so called from the supplications or litanies which are appointed in the Roman Catholic church to be sung or recited in public procession by the clergy and people.

Roger I., Count of Sicily, the youngest of the 12 sons of Tancred de Hauteville of Normandy; born in that duchy in 1031. When 27 years of age he joined his famous brother Robert Guiscard in South Italy. In 1060 Roger was invited to Sicily to fight against the Saracens; he took Messina and settled a garrison there. Everywhere the Normans were welcomed by the Christians of Sicily as their deliverers from the Moslem yoke, and they won town after town, till in 1071 the Saracen capital, Palermo, was captured. Count Roger spent the rest of his life in completing the conquest of Sicily. As early as 1060 Duke Robert had given his brother the half of Calabria, with the title of count. After Robert's death (1085) Roger succeeded to his Italian possessions, and became the head of the Norman power in Southern Europe. Roger died in Mileto, Calabria, in June, 1101.

Roger II., King of Sicily, second son of the preceding; born in 1096. By the Anti-Pope Anacletus in 1130 he was honored with the title of king. In spite of revolts of the barons, and though the German emperor and the Greek emperor were leagued against him, and Innocent II. excommunicated him, he defended himself with success and defeated the Pope's forces at Galluzzo, taking Innocent prisoner. Peace was made, the Pope annulled all excommunication against Roger, and recognized his title of king. He died in 1154.

Rogers, Henry J., an American inventor; born in Baltimore, Md., in 1811. He devised the Rogers code of flag signals adopted by the United States navy in 1846, and invented the first pyrotechnic system of signals ever used in the United States. He was associated with Samuel F. B. Morse in the construction of the first telegraph line in the United States, between Washington and Baltimore, in 1844. subsequently he invented several important telegraphic instruments, and was one of the incorporators of the Magnetic Telegraph Company, the first in the United States, in 1845. In the Civil War he was an acting master in the navy. He died in Baltimore, Md., Aug. 20, 1879.

Rogers, Jacob S., an American manufacturer; born in Paterson, N. J.; was president of the Rogers Locomotive and Machine Works in that city. He bequeathed his estate to the Metropolitan Museum of Art in New York city. He died July 2, 1901.

Rogers, John, an American sculptor; born in Salem, Mass., Oct. 30, 1829; was a machinist in early life; developed a talent in clay modelling; and in 1858 went to Europe to study. He returned to the United States in 1859, and afterward produced a large number of statuettes in clay of a new composition. His first group, "The

Checker Players," attracted popular attention. He executed the equestrian statue of General Reynolds, now at the city hall in Philadelphia.

Rogers, Randolph, an American sculptor; born in Waterloo, N. Y., July 6, 1825; studied art in Europe. He then returned to the United States; for five years had a studio in New York, and established himself in Rome in 1855. He executed the bronze doors of the National Capitol at Washington, D. C. He died Jan. 15, 1892.

Rogers, Robert, an American author; born in Dunbarton, N H., in 1727; commanded during the French and Indian War (1755–1763) the celebrated corps known as "Rogers's Rangers." He left in MS. "A Diary of the Siege of Detroit in the War with Pontiac," first published in 1860. He died in England in 1800.

Roger Williams University, a coeducational institution for colored students in Nashville, Tenn.; founded in 1863 under the auspices of the Baptist Church.

Rohlfs, Friedrich Gerhard, a German-African traveler; born in Vegesack, Germany, April 14, 1831. In 1863, and again in 1865, he traveled in North Africa, making his way on the latter occasion from Tripoli to Lake Tchad, Bornu, etc., and finally to Lagos on the W. coast. He joined the English Abyssinian expedition in 1867. He traveled across North America in 1875–1876, and in 1878 he undertook a new journey to Africa and penetrated to the Kufra Oasis. In 1880 he visited Abyssinia. He was appointed German general-consul at Zanzibar in 1884, and returned to Germany in 1885. His works include, among others: "Journey through Morocco"; "Land and People of Africa"; "What News from Africa"; etc. He died in Goderburg, Prussia, June 3, 1896.

Rokitansky, Karl, Baron von, founder of the school of pathological anatomy in Vienna; born in Koniggratz, Bohemia, Feb. 19, 1804; studied medicine at Prague and Vienna; in 1828 was appointed assistant to the Professor of Pathological Anatomy in the university of the latter city and in 1834 succeeded him. He likewise held the offices of prosector at the city infirmary, legal anatomist to the city, and medical adviser to the ministry of education and public worship. In 1869 he was made president of the Austrian Academy of Sciences. He retired from work in 1875, and died July 23, 1878. He stands preëminent among German medical teachers as the one who established pathological anatomy as the basis of all original scientific inquiry in the domain of medicine.

Roland, the name of the most prominent hero in the Charlemagne legend. Unlike most legendary heroes, Roland is a figure in history as well as in poetry and fable, though it cannot be said that the place he occupies as a historical personage is an imposing one. His character was that of a brave and loyal warrior, but simple and unsuspecting in his disposition. According to the Song of Roland, an old French epic, he was killed at the battle of Roncesvalles after a desperate struggle with the Saracens who had attacked Charlemagne's rear guard. Several epics are based upon his exploits.

Roland, Manon Jeanne Philippon, Madame, wife of Jean Marie, and herself the spirit of the Girondin party; the daughter of a Paris engraver; born in that city, March 17, 1754. She became the wife of Roland in 1779, and as her love for him was founded on his antique virtues and his philosophic spirit, she has been called "The Heloise of the 18th century." She became the sharer in all his studies, aided him in editing his works, and during his two ministries acted as his secretary and entered into all the intrigues of his party without debasing herself by their meanness. After the flight of her husband, Madame Roland was arrested by order of the Paris Commune under the dictation of Marat and Robespierre, and consigned to the Abbaye prison, from which, on Oct. 31, she was removed to a more wretched abode in the Conciergerie. She was executed Nov. 8, 1793.

Roland de la Platiere, Jean Marie, a French statesman; born in Villefranche, France, Feb. 18, 1734; was inspector-general of manufactures and commerce in that city when the

French Revolution commenced, and having embraced popular principles became, in 1790, member of the Lyons municipality. The practical philosophy, commercial knowledge, and strict simplicity of Roland, recommended him to men of all parties, and when the patriot ministry was formed in March, 1792, he was made minister of the interior. He kept his position till June 13, when the royal veto on the proposal to form a patriot camp around Paris, and on the decree against the priests, provoked his celebrated letter to the king, written, however, by Madame Roland, and, as a consequence, his almost instant dismissal. The struggle between the Girondists and the municipality under the guidance of Robespierre filled up the period till May 31; the former party were then vanquished, and Roland was among the number who saved their lives by flight. He found an asylum with his friends at Rouen, but deliberately killed himself with his cane sword on hearing of the execution of his wife, Nov. 15, 1793.

Rolfe, William James, an American editor; born in Newburyport, Mass., Dec. 10, 1827. He was a distinguished Shakespearean scholar, and published many editions of Shakespeare, annotated.

Roller (Coraciidæ), a family of Picarian birds characteristic of the Ethiopian and Oriental regions, though the common roller is extensively distributed in the Palæarctic region and a few species enter the Australian region. None are found in the New World.

Roller Boat, a boat propelled by wheels which roll over and on the water instead of cutting through it. This craft was built by Ernest Bazin, a Frenchman, in 1896.

Roller Skate. The earliest roller skate was patented by a Frenchman in 1819. About 1864 the mania for rolling skating first appeared in England; but in 1866 the "rinking" fever broke out in Australia, and spread thence to England and the United States. Since that time the craze has appeared at intervals only to again die out. The most recent of these arose in 1884–1885 in the United States, but soon shared the fate of its predecessors. The most recent form has only two wheels, set one behind the other, and resembling the ice skate in its form and action.

Rollin, Ambrose Lucien, a West Indian historian; born in Trois Rivieres, Guadeloupe, in 1692. He devoted his leisure to researches upon the Caribs and other Indian tribes, and published several works which are still considered authorities upon the subjects he covered. He died at Pointe a Pitre in 1749.

Rollin, Charles, a French historian; born in Paris, Jan. 30, 1661. His best-known work is the "Ancient History" (1730–1738), often reprinted in France, England, and the United States. He died in Paris, Sept. 14, 1741.

Rolling Mill, a combination of machinery used in the manufacture of malleable iron and other metals of the same nature. By it the iron which is heated and balled in the puddling furnace is made into bars or sheets.

Rollins, Alice Marland (Wellington), an American verse writer born in Boston, June 12, 1847. She died in Boston, Dec. 5, 1897.

Roman Architecture. It can hardly be said that the early Romans had any style of architecture of their own, since they borrowed their ideas of building first from the Etruscans and afterward from the Greeks. In the time of Romulus their dwellings were of the rudest description, being chiefly composed of straw; and at a later period their temples were only small square buildings, scarcely large enough to contain the statues of their deities. The first king who constructed works of a large class requiring architectural skill was Ancus Martius. His first attempt was the building of the city and port of Ostia, at the mouth of the Tiber. During the first two Punic wars many temples were erected; but they do not appear to have been of great magnificence. Altogether, very little taste had been shown in the Roman buildings till their conquests extended and they became intimate with the more costly buildings of their enemies. Metellus Macedonicus, the contemporary of Mummius, the victor of Corinth, was the first who built a temple of marble at Rome; but from that time most of the larger

edifices were built of that material. Grecian art and architecture were also introduced about the same period. Under Julius Cæsar, many new and magnificent buildings were erected; and during the Golden Age, under Augustus, most of the finest edifices were built; architects flocked from all quarters, and especially from Greece, to beautify the city. It was said of Augustus "that he found Rome built of brick and left it of marble." After this period, however, architecture declined till Constantine transferred the seat of government to Byzantium, when a new style was introduced.

A characteristic feature in Roman architecture, and one that entered largely in the system, is the employment of order above order in the same building. While this arrangement is faulty, for it is incompatible with the requirements of the highest standard of taste, yet still, at the same time, it proves the Roman aptness of invention and versatility of design. The style of architecture called the Roman order was invented by the Romans from the Ionic and Corinthian orders; and hence it is sometimes called the Composite order.

Roman Candle, a species of fireworks consisting of a tube partially filled with alternating perforated stars and small charges of gunpowder. Fire communicated to the upper end ignites the charges successively, which throw out the stars till all are discharged.

Roman Catholic Church, the name of that community of Christians who profess the same faith, partake of the same sacraments and sacrifice, and are united under one head, the Pope or Bishop of Rome, called successor of St. Peter, and under the bishops subject to him. Its essential parts are the Pope, bishops, pastors — so far as they are priests — and laity. The distinctive characteristic of the Roman Church is the supremacy of the papacy. After the Council of Trent Pope Pius IV. added to the formal profession of faith the articles on transubstantiation, invocation of saints, and others which chiefly distinguish the Roman from other Christian communities.

The total number of Roman Catholics throughout the world is estimated at 300,000,000. The United States has about 12,000,000 Roman Catholics, 1 apostolic delegate, 1 cardinal, 13 archbishops, 72 bishops with sees, about 10,750 priests, 9,570 churches, 5,105 chapels and stations, and 958,960 pupils in parish schools. In the British possessions of North America there are about 2,600,000 Roman Catholics, 39 archbishops and bishops, about 2,900 priests, 2,600 churches, chapels, and stations, 800 colleges and academies, and 4,400 parish schools.

Romance. Romance has long since lost its original signification in every country except Spain, where it is still occasionally used in speaking of the vernacular, as it was in the Middle Ages when Latin was the language of the lettered classes and of documents and writings of all kinds. But even there its commoner application is, as elsewhere, not to a language, but to a form of composition. In English it has been almost invariably applied to a certain sort of prose fiction, and, in a secondary sense, to the style and tone prevailing therein. By "the romances," using the term specifically, we generally mean the prose fictions which, as reading became a more common accomplishment, took the place of the lays and "chansons de geste" of the minstrels and trouveres, and were in their turn replaced by the novel. Of these the most important in every way are the so-called romances of chivalry, which may be considered the legitimate descendants of the "chansons de geste." The chivalry romances divide naturally into three families or groups; the British (which, perhaps, would be more scientifically described as the Armorican or the Anglo-Norman), the French, and the Spanish; the first having for its center the legend of Arthur and the Round Table; the second formed round the legend of Charlemagne and the Twelve Peers; and the third consisting mainly of Amadis of Gaul followed by a long series of sequels and imitations of one kind or another.

Romance Languages, a general name for those modern languages that are the immediate descendants of the language of ancient Rome. They include the Italian, French, Provencal, Spanish, Portuguese, Rumanian, and Romansch.

Romanesque Architecture, a general term applied to the styles of architecture which prevailed from the 5th to the 12th centuries. Of these there are two divisions: (1) The debased Roman, prevalent from the 5th to the 11th centuries, and including the Byzantine modifications of the Romans, and (2) the late or Gothic Romanesque of the 11th and 12th centuries, comprising the later Byzantine, the Lombard, and the Rhenish, Saxon, and Norman styles. The former is a pretty close imitation of the Roman, with modifications in the application and distribution of the peculiar features; the latter is Gothic in spirit, having a predominance of vertical lines, and various other new features.

Roman Roads, certain ancient roads in Great Britain which the Romans left behind them. They were uniformly raised above the surface of the neighboring land and ran in a straight line from station to station.

Romans, Epistle to the, one of the books of the New Testament, written by the Apostle Paul, and addressed to the Christian Church at Rome. It is the 5th in order of time, though placed first among the epistles, either from the predominance of Rome, or because it is the longest and most comprehensive of the apostle's epistles. It is generally agreed to have been written about A. D. 58, after he had passed through a lengthened period of experience. That it is the genuine and authentic production of the apostle has rarely been called in question, and is supported by the strongest evidence.

Roman Walls, certain walls or ramparts in Great Britain constructed by the Romans. The most celebrated of these is the wall built by Hadrian (A. D. 120) between the Tyne and the Solway. It was further strengthened by Severus, and hence is often called the walls of Severus. In 139 Lollius Urbicus built a second wall or N. rampart between the Forth and the Clyde, which occupied the same line as the chain of forts built by Agricola (A. D. 80–85). It is known as the wall of Antoninus. These walls formed the N. boundaries of the Roman dominions in Great Britain, and were built to prevent the incursions o the Picts and Scots.

Rome, the most powerful State o antiquity; founded about 753 B. by a settlement from Alba Longa le by Romulus. At first the new cit was ruled by kings, but in 509 B. the people established a republic whic lasted for 500 years. Its most im portant feature was the struggle be tween the plebeians and the patrician settled finally in 286 B. C., by admis sion of plebeians to a share in th government. Meanwhile Rome ha been gradually spreading out, and b 275 B. C. was mistress of all Italy.

The next 30 years were crucial i the history of Rome. Her aggressiv policy in the Mediterranean brough her face to face with Carthage, an under their military genius Hann bal, the Carthaginians threatened th very existence of Rome itself. Car thage was finally burned to the groun in 146 B. C. By 133 B. C. Rome ha conquered Macedonia and Asia M nor.

At this point begins the decline o Rome as a republic. A series of bi ter civil wars centralized the govern ing power in the hands of a few lead ers and in 48 B. C. Julius Cæsar wa created Imperator. With Cæsar th republic and Rome's greatest perio came to an end. Under the republi the power of Rome had been extend ed from Arabia to Great Britain, an from Spain to Armenia.

In 27 B. C. Octavian became firs emperor of Rome under the title o Augustus. His immediate successor added slightly to Roman territory, bu under Marcus Aurelius the decline be gan. From A. D. 180 to 284 Rom grew gradually weaker. In 284 Dio cletian reorganized the empire, an for nearly 200 years these reform delayed the inevitable disruption; bu in 395 the empire separated into tw divisions; the Eastern, or Byzantin and the Western; and in 476 th Western, or Roman empire, was fina ly overthrown, and Odoacer, a Germa became King of Italy.

Rome, the capital of Italy, a formerly of the Roman empire, re public, and kingdom, and long th religious center of Western Christen dom, is one of the most ancient an interesting cities of the world.

tands on both sides of the Tiber, bout 15 miles from the sea. The city s tolerably healthy during most of the ear, but in late summer and early utumn malaria prevails to some ex- ent. It has been greatly improved n cleanliness and healthfulness since t became the capital of modern Italy.

The streets of ancient Rome were rooked and narrow, till after the fire hat took place in Nero's reign, when he new streets were made both wide nd straight. In the reign of Augus- us the population is believed to have mounted to about 1,300,000, and in hat of Trajan was not far short of ,000,000.

Ancient Rome was adorned with a ast number of splendid buildings, in- luding temples, palaces, public halls, heaters, amphitheaters, baths, porti- oes, monuments, etc., of many of vhich we can now form only a very mperfect idea. The oldest and most acred temple was that of Jupiter Cap- tolinus, on the Capitoline Hill. The Pantheon, a temple of various gods (now Church of S. Maria Rotonda), s still in excellent preservation. It is great circular building with a dome oof of stone 140 feet wide and 140 eet high, a marvel of construction, eing 2 feet wider than the great dome f St. Peter's. The interior is light- d by a single aperture in the center f the dome. Other temples were the Temple of Apollo, which Augustus uilt of white marble, on the Pala- ine, containing a splendid library, vhich served as a place of resort to he poets; the Temple of Minerva, vhich Pompey built in the Campus Martius, and which Augustus covered vith bronze; the Temple of Peace, nce the richest and most beautiful emple in Rome, built by Vespasian, in he Via Sacra, which contained the reasures of the temple of Jerusalem, splendid library, and other curiosi- ies, but was burned during the reign f Commodus; the temple of the Sun, hich Aurelian erected to the E. of he Quirinal; and the magnificent emple of Venus, which Cæsar caused o be built to her as the origin of his amily. The principal palace of an- ient Rome was the Palatium or im- erial palace, on the Palatine Hill, a rivate dwelling house enlarged and dopted as the imperial residence by Augustus. Succeeding emperors ex- tended and beautified it.

Among the theaters, those of Pom- pey, Cornelius Balbus, and Marcellus were the most celebrated. That of Pompey, in the Campus Martius, was capable of containing 40,000 persons. The most magnificent of the amphi- theaters was that of Titus, completed A. D. 80, now known as the Coliseum or Colosseum. Though only one-third of the gigantic structure remains, the ruins are still stupendous. The prin- cipal of the circuses was the Circus Maximus, between the Palatine and Aventine, which was capable of con- taining 260,000 spectators. With slight exception its walls have entirely disappeared, but its form is still dis- tinctly traceable.

The public baths or thermæ in Rome were also very numerous. The largest were the Thermæ of Titus, part of the substructure of which may still be seen on the Esquiline Hill; the Thermæ of Caracalla, even larger, extensive remains of which still exist in the S. E. of the city; and the Thermæ of Diocletian, the largest and most magnificent of all, part of which is converted into a church. Of the triumphal arches the most celebrated are those of Titus (A. D. 81), Severus (A. D. 203), and that of Constantine (A. D. 311), all in or near the Forum and all well preserved structures.

It was not till the 17th century that the modern city was extended to its present limits on the right bank, by a wall built under the pontificates of Urban VIII. (1623–1644) and Inno- cent X. (1644–1655), and inclosing both the Janiculum and the Vatican hills. The boundary wall on the left or E. bank of the river follows the same line as that traced by Aurelian in the 3d century, and must in many parts be identical with the original structure. The walls on both banks are built of brick, with occasional por- tions of stone work, and on the out- side are about 55 feet high. The greater part dates from A. D. 271 to 276. The city is entered by 12 gates (several of those of earlier date being now walled up) and several railway accesses. Since Rome became the cap- ital of united Italy great changes have taken place in the appearance of the city, many miles of new streets being

built, and much done in the way of paving, drainage, and other improvements. It has thus lost much of its ancient picturesque appearance, and is rapidly acquiring the look of a great modern city with wide, straight streets of uniform-looking tenements having little distinctive character. It is still, however, replete with ever varying and pleasing prospects.

The most remarkable of the churches is the Cathedral of St. Peter, the largest and most imposing to be found anywhere. Another remarkable church is that of San Giovanni in Laterano, on an isolated spot near the S. wall of the city. From the central balcony the Pope pronounces his benediction on Ascension day; and the church is the scene of the councils which bear its name.

Among other churches are Sta. Maria della Pace, celebrated for its paintings, particularly the four Sibyls, considered among the most perfect works of Raphael; Sta. Maria del Popolo, interesting from the number of its fine sculptures and paintings (Jonah by Raphael, ceiling frescoes by Pinturicchio, and mosaics from Raphael's cartoons by Aloisio della Pace).

The Vatican, adjoining St. Peter's, comprises the old and new palaces of the Popes (the latter now the ordinary papal residence), the Sistine chapel, the Loggie and Stanze, containing some of the most important works of Raphael, the picture gallery, the museums (Pio-Clementino, Chiaramonti, Etruscan and Egyptian), and the library (220,000 volumes and over 25,000 MSS.). The palace of the Quirinal was formerly a favorite summer residence of the Popes, but is now occupied by the King of Italy. The Palazzo della Cancelleria is the only palace on the left bank of the river still occupied by the ecclesiastical authorities. The building was designed by Bramante, and is one of the finest in Rome.

Among educational institutions the first place is claimed by the university, founded in 1303. The most flourishing period of the university was the time of Leo X. (1513–1522), under whom the building still occupied by it was begun. Attached to the university are an anatomical and a chemical theater, and cabinets of physics, mineralogy, and zoölogy, as also bo tanic gardens, and an astronomical ob servatory. The university is attende by about 1,000 students.

The external trade is unimportant and is carried on chiefly by rail, th Tiber being navigated only by sma craft. There are railway lines con necting with the general system o Italy; and steamers from Civita Vec chia to Naples, Leghorn, and Genoa The chief manufactures are woole and silk goods, artificial flowers, earth enware, jewelry, musical strings mosaics, casts, and objects of art. Th trade is chiefly in these articles, an in olive oil, pictures, and antiquities.

The population of the city has o late vastly increased. In 1870 it wa 226,022; in 1881, 276,463; and i 1898 it was officially calculated a 500,610.

Romero, Don Matias, a Mexica diplomatist; born in Oxaca, Mexico Feb. 24, 1837; was graduated at th Academy of Theoretical and Practica Law, Mexico City, in 1855. He wa admitted to the bar in 1857 and at a early age entered public life, bein sent to Washington, D. C., as secretar of the Mexican legation in 1859. I 1860 he was made charge d'affaires but in 1863 returned to Mexico t take part in the war against th French. Subsequently he was mad minister to the United States; Secre tary of the Treasury of Mexico, an postmaster-general. In 1882 he wa reappointed minister to the Unite States and remained so till his death He was a member of the Internationa American Conference and was a pro lific writer, publishing upward of 5 volumes of technical reports. He die in Washington, D. C., Feb. 30, 1898.

Romney, George, an Englis painter; born in Rickside, Lancashire Dec. 15, 1734. He steadily rose i popularity, and was finally recognize as inferior only to Reynolds an Gainsborough as a portrait-painter some critics even placed him highe than either. His residence in Londo was interrupted by occasional visit to the Continent for purposes of study and his most prosperous period date from 1775, after his return from visit of 18 months to Rome. Man distinguished Englishmen and man ladies of rank sat to him for their por

traits. He did not neglect historical or imaginative compositions, and he contributed several pictures to Boydell's famous Shakespeare gallery, founded in 1786. Fine examples of his work command high prices. He died in Kendal, Nov. 15, 1802.

Romulus, mythical founder and first King of Rome. According to the legends, he was the son of the vestal Rhea Sylvia by the god Mars, Sylvia being a daughter of Numitor, rightful heir of the King of Alba, but deprived by his brother. Exposed with his twin brother Remus, the babes were suckled by a she wolf, and afterward brought up by a shepherd. Their parentage was discovered, and they determined to found a city on the banks of the Tiber, the scene of their exposure. The right to choose the site was acquired by Romulus; and Remus not acquiescing, in his disappointment, was slain. Inhabitants for the new city were found by establishing a refuge for murderers and fugitive slaves on the Capitoline hills, and by carrying off the Sabine maidens at a feast to which they were invited. This led to war with the Sabines, which ended, through the intervention of the Sabine women, in a union of Romans and Sabines, under their two kings, Romulus and Titus Tatius. The latter was soon slain, and Romulus reigned alone. He was regarded as the author of the fundamental division of the people into tribes, curiæ, and gentes, and of the institution of the senate and the comitia curiata. The date commonly assigned for the foundation of Rome is 753 B. C.

Rondeau, or **Rondo,** a kind of poetry which returns, as it were, to the same point, or in which part is repeated, thus containing a refrain. In music, a light form of composition, in which the subject or theme returns frequently; it usually forms the last movement of a symphony or sonata.

Ronsard, Pierre de, a French poet; born in Vendomois, France, Sept. 11, 1524. After a short diplomatic career, he devoted himself to literary studies and became the chief of the band of seven poets afterward known as the "Pléiade." Ronsard's popularity and prosperity during his life were very great. Henry II., Francis II., and Charles IX. esteemed him, and the last bestowed several abbacies and priories on the poet. He died in Touraine, Dec. 27, 1585.

Rood, a cross or crucifix; specifically, a representation of the crucified Saviour, or, more generally, of the Trinity, placed in Catholic churches over the altar screen, hence termed the rood screen.

Roof, the external covering on the top of a building; sometimes of stone, but usually of wood overlaid with slates, tiles, lead, etc. Since the introduction of iron in the construction of roofs, spaces of almost any width can be roofed over. Also that which resembles, or corresponds with, the cover of a building; as, the roof of the mouth, the roof of the firmament, etc.

Rook, a European species of crow resembling in size and color the carrion crow, but differing in having the base of the bill whitish and scurfy, and bare of feathers. The rook is gregarious at all seasons, resorting constantly to the same trees every spring to breed, when the nests may be seen crowded one over another upon the upper branches.

Rooke, Sir George, an English admiral; born near Canterbury; England, in 1650. He entered the navy at an early age and rose to be vice-admiral in 1692. For his gallantry in a night attack on the French fleet off Cape La Hogue he was knighted in 1692. His further services include the destruction of the French and Spanish fleets in Vigo Bay (1702), and a share in the capture of Gibraltar in July, 1704. In the following August he fought a French fleet of much superior force, under the Comte de Toulouse, off Malaga. The result was undecisive, and this fact was used against Rooke by his political opponents. Sir George quitted the service in disgust in 1705. He served in several Parliaments as member for Portsmouth. He died near Canterbury, Jan. 24, 1709.

Rookwood Pottery, The, a ceramic establishment founded in Cincinnati in 1880 by Mrs. Maria Longworth Storer, whose father, Joseph Longworth, was the founder of the art school and a chief patron of the art museum of the same city. The distinguishing mark of Rookwood

faience in all its wares is the decorative quality of the color grounds, carefully studied with reference to harmony.

Roon, Albrecht Theodor von, a Prussian war minister; born in Pleushagen, Prussia, April 30, 1803. He entered the army at the age of 18, and speedily developed a high talent for the theoretical and educational branches of his profession. In 1866 he was made general of infantry, and was present with the army in Bohemia during the Seven Weeks' war against Austria. On the conclusion of the war Von Roon was made a count, and on Jan. 1, 1873, he became a field-marshal and minister-president of Prussia. In November of the same year, however, he laid down his public offices and retired to his estate in Silesia, where he chiefly resided till his death. He died in Berlin, Feb. 13, 1879.

Roosevelt, Robert Barnwell, an American lawyer; born in New York city, Aug. 7, 1829. He was an enthusiastic sportsman, and published: "The Game Birds of the North," and "Progressive Petticoats," a humorous satire on female physicians.

Roosevelt, Theodore, an American statesman and 26th President of the United States; born in New York city, Oct. 27, 1858; was graduated at Harvard University in 1880 and began the study of law. The next year he was elected to the Assembly from the 21st District of New York, serving in the Legislatures of 1883, 1884, and 1885. While chairman of the Committee on Cities, he introduced reform legislation which has proved immensely beneficial to the people of New York. One of his measures was the act taking from the Board of Aldermen power to confirm or reject the appointments of the mayor. He was chairman of the noted Legislative Investigating Committee which bore his name and which revealed many of the abuses existing in the city government in the early eighties.

In 1886 Mr. Roosevelt was the Republican candidate for mayor against Abram S. Hewitt, United Democracy, and Henry George, United Labor. Mr. Hewitt was elected by about 22,000 plurality. Mr. Roosevelt was appointed a Republican member of the United States Civil Service Commission by President Cleveland in hi first administration. His ability an rugged honesty in the administratio of the affairs of that office greatl helped to strengthen his hold on popu lar regard. He continued in that offic till May 1, 1895, when he resigned t accept the office of police commissione from Mayor Strong. His record a president of the board was of th highest character. He found the ad ministration of affairs in a demoralize condition, but the same energeti methods that had characterized all hi work, the same uncompromising hon esty that is the most prominent note i his character, when applied to polic affairs, soon brought the administra tion of the department to a high de gree of efficiency.

From his New York office he wa called by President McKinley, April 1897, to be Assistant Secretary of th Navy. There again his energy an quick mastery of detail contribute much to the successful administratio of the department and the preparatio of the navy for the most brilliant fea in naval warfare in the history of th world.

When war was declared again Spain Mr. Roosevelt refused to r main in the quiet government offic For years he had spent his summe on a Dakota ranch, and learned t know cowboys as strong, sincere me on whom the nation could rely. Fro these the famous cavalry troop know as the "Rough Riders" was large recruited. Four years' membership i the 8th Regiment of the New Yor State National Guard, to which h belonged and in which he was for time a captain, furnished at least basis for his brilliant military caree But more than all else that induce him to go to the front were his d votion to the cause for which the wa was fought and his love for an activ life. These same reasons drew to hi scores of young men of prominent fam ilies from all parts of the countr who joined the Western cavalryme The regiment thus formed was know as Roosevelt's Rough Riders, thoug it was commanded by Colonel Woo of the regular army, Roosevelt bein second in command, with the rank, t promoted, of lieutenant-colonel.

For bravery in the battle of Las Guasimas Roosevelt was promoted colonel and in the three days of fighting before Santiago, and especially in the magnificent charge up San Juan Hill, he acted with conspicuous gallantry. On the return of the Rough Riders from Cuba, Roosevelt was the popular idol of the country; and despite considerable opposition from professional politicians was nominated for governor of New York on the Republican ticket, Sept. 27, 1898. He was elected by a plurality of 18,000, Nov. 4. In the Republican National Convention held in Philadelphia in the summer of 1900 Roosevelt was enthusiastically nominated for Vice-President on the Republican ticket headed by William McKinley. He was elected Nov. 4, and was formally installed March 4, 1901. On the death of President McKinley in Buffalo, N. Y., Sept. 14, 1901, Roosevelt took the oath of office as his successor, and became the 26th President of the United States. On taking office he announced that his policy would be a continuation of that inaugurated by President McKinley. He wrote "Winning of the West"; "Life of Gouverneur Morris"; "Life of Thomas Hart Benton"; "Naval War of 1812"; "History of New York"; "American Ideals and Other Essays"; "The Wilderness Hunter"; "Hunting Trips of a Ranchman"; "Ranch Life and the Hunting Trail"; "The Rough Riders" (1899); "Life of Cromwell" (1900); "The Strenuous Life" (1900); etc.

In 1903 President Roosevelt was nearly indicated as the candidate of his party for the presidency in 1904. Owing to the untimely fate of President McKinley great care has been taken to guard President Roosevelt from danger, and the prudence of this was shown in the autumn of 1903, when a maniac armed with a pistol sought access to the President in his summer home at Oyster Bay, Long Island.

Root, in anatomy, that part of any organ or appendage of the body which is buried in another part. Thus the root of a nail is the portion covered by the skin; the root of a tooth, the base of it which is lodged in a socket.

In astronomy, the moment from which one begins to calculate the time of revolution of a planet.

In botany, the radix or descending axis of a plant. The tendency downward is very powerful. A root has no perfect bark, true pith, medullary sheath, or true leaves, and only a thin epidermis, a few stomata, and very rarely leaf-buds. Its growth is chiefly at the lower extremity. The chief functions of the root are to anchor the plant firmly in the ground, and to transmit upward to the stem and leaves absorbed nutriment from the soil. Roots require air, and in some cases in gardens obtain it by pushing their way into old drains, completely obstructing them in some instances.

Root, Elihu, an American statesman; born in Clinton, N. Y., Feb. 15, 1845; was graduated at Hamilton College in 1864, and after teaching for a while entered the New York University Law School and was graduated in 1867. On Aug. 1, 1899, he was appointed Secretary of War by President McKinley, and on March 5, 1901, was reappointed. After the Spanish-American War, Secretary Root represented the United States government in all official communications with Cuba, Porto Rico, and the Philippine Islands. In August, 1903, he resigned the office of Secretary of War, his resignation to take effect in January, 1904.

Root, George Frederick, an American musician and song-writer; born in Sheffield, Mass., Aug. 30, 1820. He is the author of a large number of popular and patriotic songs. He died Aug. 6, 1895.

Rope, a large, stout, twisted cord of hemp, of not less, generally, than an inch in circumference. A certain proportion of hemp twisted together forms a yarn, and a number of yarns form a strand. Three strands twisted together form a rope. Other materials besides hemp are used in the manufacture of rope, but to a smaller extent. Coir rope, which comes from Ceylon and the Maldive Islands, is made from the fibrous husk of the cocoanut. Manila rope from the fibers of a species of wild banana. Wire rope, both iron and steel, is also employed; on shipboard, particularly, to a considerable extent.

Ropes, John Codman, an American historian; born in St. Petersburg, Russia, April 28, 1836; was graduated at Harvard in 1857; studied at the Harvard law school, and was admitted to the bar in 1861. Largely through his influence the United States government began the collection and preservation of information relating to the Civil War, and he organized the Military Historical Society of Massachusetts. Besides contributions to this society and to periodicals he wrote: "The Army under Pope" (1881); "The First Napoleon" (1885); "The Campaign of Waterloo"; "Atlas of Waterloo"; and "The story of the Civil War." Died in Boston, Mass., Oct. 28, 1899.

Roquette, Adrien Emmanuel, an American poet; born in New Orleans, La., Feb. 13, 1813. He wrote with equal ease and grace in English and French. He died in New Orleans, July 15, 1887.

Roraima, a celebrated mountain in South America, where the boundaries of British Guiana, Venezuela, and Brazil meet, 7,800 feet high, flat-topped, with steep, rocky sides, rendering the summit almost inaccessible. More than one explorer has succeeded, however, in reaching the top.

Rorqual, the name given to certain whales, closely allied to the common or whalebone whales, but distinguished by having a dorsal fin, with the throat and under parts wrinkled with deep longitudinal folds, which are supposed to be susceptible of great dilatations, the use of which is as yet unknown. Two or three species are known, but they are rather avoided on account of their ferocity, the shortness and coarseness of their baleen or whalebone, and the small quantity of oil they produce. The N. rorqual attains a great size, being found from 80 to over 100 feet in length, and is thus the largest living animal known. The rorqual feeds on cod, herring, pilchards, and other fish, in pursuing which it is not seldom stranded on the shore.

Rosa, Carl August Nicholas, originally Rose, a German opera manager and violinist; born in Hamburg, Germany, March 22, 1842. He came to the United States, where during a concert tour he met and married (in New York, in February, 1867) Mme Parepa; formed an opera company, including Mme. Parepa-Rosa, Wachtel Santley, Ronconi, and Formes, traveling as far as California. After his wife's death (1874), he organized in London an English opera company with which he produced nearly a score of popular operas not previously given in English. He died in Paris, France April 30, 1889.

Rosa, Salvator, an Italian painter etcher and poet; born near Naples Italy, June 20, 1615. In 1638 Rosa settled in Rome, where he soon established his reputation and rose to fame and wealth. The bitterness of his satire, expressed both in his satirical poems and in an allegorical painting of the "Wheel of Fortune" rendered his stay in Rome inadvisable. He therefore accepted an invitation to Florence (1642), where he remained nearly nine years under the protection of the Medici. He finally returned to Rome. Salvator Rosa delighted in romantic landscape, delineating scenes of gloomy grandeur and bold magnificence. Rosa etched from his own works with great skill. He died in Rome Italy, March 15, 1673.

Rosaceæ, roseworts; an order of plants, placed by Lindley under his Rosal Alliance. The rosaceæ occur chiefly in the temperate and cold parts of the Northern Hemisphere; when they occur in the tropics it is generally on high land.

Rosary, in ordinary language, a chaplet, a garland. Also, a bed of roses; a place where roses grow. In comparative religion, a string of beads by means of which account is kept of the number of prayers uttered.

In the Roman Catholic Church (1) A form of prayer in which the "Hail Mary" is recited 150 times in honor of the virgin Mary. (2) The beads on which any of the forms of prayers are said.

Rosary Sunday, the first Sunday in October; a feast instituted by Gregory XIII. for the Confraternity of the Rosary, and made of universal observance after the victory of Emperor Charles VI. over the Turks, in gratitude to the Blessed Virgin. An impetus has been given to the devotion of the rosary by Leo XIII., who en-

joined its daily use in public during October. Roses are blessed and distributed as souvenirs, and the rosary is recited continually during the day.

Rose, the beautiful and fragrant flower which has given name to the large natural order Rosaceæ, which seems to be confined to the cooler parts of the Northern Hemisphere. The species are numerous and are extremely difficult to distinguish. They are prickly shrubs, with pinnate leaves, provided with stipules at their base; the flowers are very large and showy. The rose is easily cultivated, and its varieties are almost endless.

The American Beauty rose had its birth in an almost neglected corner of the Washington garden of the late George Bancroft. Amid a tangle of roses of common varieties suddenly blossomed this new and wonderful rose. Slips were at once experimented with. At first they were grown out of doors, but before long it was found that hothouse culture such as is given to tea roses was best suited to the splendid new rose. During the comparatively few years of its existence the American Beauty has been steadily improved in size and fragrance.

Rose Acacia, a highly ornamental flowering shrub inhabiting the S. parts of the Alleghany Mountains, and now frequently seen in gardens in Europe. It is a species of locust; the flowers are large, rose-colored, and inodorous; the pods are glandular-hispid.

Rosebery, Archibald Philip Primrose, 5th Earl of, an English statesman; born May 7, 1847; was educated at Eton and Oxford, and succeeded his grandfather in 1868. He is an advanced Liberal in politics, and a ready and effective speaker. He was under-secretary at the home office, 1881–1883; lord privy seal and first commissioner of works, 1885; next year held the secretaryship of foreign affairs till the fall of the Gladstone government; was secretary of foreign affairs again in 1892–1894; prime minister, 1894–1895. In 1878 he was elected lord-rector of Aberdeen University; in 1881 of Edinburgh University. In 1899 of Glasgow University. In 1889 he became a member of the London County Council, and was appointed chairman of that body. The University of Cambridge conferred the degree of LL. D. on him in 1888. He advocated the reform of the House of Lords, and was much interested in the questions of imperial federation and the social conditions of the masses. In 1878 he married Hannah, daughter of Baron Mayer de Rothschild; she died in 1890. When Mr. Gladstone succeeded to power Lord Rosebery became Secretary of Foreign Affairs, and in October of the same year (1892) he was made a Knight of the Garter. On the resignation of Mr. Gladstone in March, 1894, the queen offered the post of prime minister to Lord Rosebery and he carried on the government with no little success till July, 1895. He then urged on his supporters that the general election should be fought on the question of the predominance of the House of Lords. During 1896 his attitude on the Armenian question differed from that of Mr. Gladstone, and finally he decided on resigning the leadership of the party in order to have for himself an absolutely free hand on this question. His view was that Great Britain should not be hurried into an intervention in the Armenian question, which would lead to the risk of a European war. In 1898 Lord Rosebery, from his place in the House of Peers, paid a noble and eloquent tribute to the life and public services of Mr. Gladstone, and later on spoke in the country in support of the attitude taken up by Lord Salisbury on the Fashoda situation. Lord Rosebery keeps an excellent racing stud, and both in 1894 and 1895 he won the Derby.

Rose Chafer (Cetonia aurata), an injurious beetle, whose grubs destroy the roots of strawberries and other plants, while the adults spoil the flowers of roses, strawberries, and seed turnips. The adults, which are well able to fly from place to place, measure about an inch in length, are golden green above, coppery with a tint of rose beneath. The "rose-bug" of the Eastern United States is another beetle, a voracious pest which often appears in immense numbers and destroys the flowers of rosaceous plants.

Rosecrans, William Starke, an American military officer; born in Kingston, O., Sept. 6, 1819. He graduated at the United States Military

Academy in 1842, and entered the army as brevet 2d lieutenant of engineers, but after serving for a year at Hampton Roads returned to West Point as assistant Professor of Engineering. In 1847 he again entered active service, but resigned in 1854 to become a consulting engineer and architect in Cincinnati, O. He began his career in the Civil War by organizing and drilling the Home Guard in Ohio; and in June, 1861, was placed in charge of Camp Chase. He was made colonel of the 23d Ohio Volunteers soon afterward, and in a short time was appointed a Brigadier-General. In May, 1862, he commanded the right wing of the Army of the Mississippi during the siege of Corinth; and on June 11, 1862, succeeded General Halleck in the command of that army. On Oct. 26, 1862, he relieved General Buell of the command of the Army of the Cumberland, and on Oct. 30, began his memorable march to Nashville, Tenn. Owing to his defeat at Chickamauga in September of the following year he was superseded in command by General Thomas and assigned to the Department of Missouri. He was deprived

ROSE CHAFER.
a, larva; *b*, cocoon.

of his command Dec. 9, 1864, whereupon he retired to Cincinnati, where he remained inactive till the close of the war. In 1868 he was appointed United States minister to Mexico; in 1880 and 1882 was elected to Congress; and in June, 1885, was appointed register of the United States Treasury. An act passed in 1898 restored him to the rank of Brigadier General in the army and placed him on the retired list. He died near Redondo, Cal., March 11, 1898.

Rosemary, the Rosmarinus officinalis, a native of the S. of Europe and Asia Minor, and cultivated in India, etc.; a very fragrant labiat

ROSEMARY.

plant with a white or pale-blue corolla. The leaves are sessile and gra with edges rolled round below. I is sometimes made into garlands.

Rosenkranz, Johann Karl Friedrich, a German philosopher born in Magdeburg, Prussia, April 23 1805. He was the best representative of the "center" of Hegel's school, and spent much time in rearranging and reclassifying the system His principal works, nearly all o which have received English versions are: "Psychology, or the Science o Subjective Mind"; "Critical Explanations of Hegel's System"; "Autobiography"; "The History of Literature." He died in Konigsberg, Prussia, June 14, 1879.

Roses, Wars of the, a disastrous dynastic struggle which desolated England during the 15th century, from the first battle of St. Albans (1455

to that of Bosworth (1485), It was so called because the two factions into which the country was divided upheld the two several claims to the throne of the Houses of York and Lancaster, whose badges were the white and the red rose respectively. It did for England what the French Revolution did three centuries later for France in virtually wiping out the old nobility.

ROSETTA STONE.

Rosetta Stone, the name given to a stone found near the Rosetta mouth of the Nile by a French engineer in 1798. It is a tablet of basalt, with an inscription of the year 136 B. C., during the reign of Ptolemy Epiphanes. The inscription is in hieroglyphic, in demotic, and in Greek. It was deciphered by Dr. Young, and formed the key to the reading of the hieroglyphic characters. It was captured by the English on the defeat of the French forces in Egypt, and is now kept in the British Museum.

Rose Window, a circular window, divided into compartments by mullions and tracery radiating from a center, also called Catharine wheel and marigold window according to modifications of the design. It forms a fine feature of the church architecture of the 13th and 14th centuries.

Rosewood, a valuable wood, the best of which comes from Brazil. Two kinds, or two qualities, are known in commerce. These much resemble each other, the one, which is usually rather the better figured of the two, coming from Rio de Janeiro, and the other from Bahia. The South American and Indian kinds are all hard and durable and take a fine polish. They are in every way excellent furniture woods, the Brazilian kinds being only more valuable because they are more beautifully figured. The Indian rosewood is often elaborately carved by native workmen, and for this purpose it is well suited. An inferior kind of rosewood is brought from Honduras. The name is said to have been given because of a striking rose-like odor that the wood gives out when freshly cut.

Rosicrucians, a mystic secret society which became known to the public early in the 17th century, and was alleged to have been founded by a German noble called Christian Rosenkreuz, A. D. 1388. He was said to have died at the age of 106. The society consisted of adepts, who perpetuated it by initiating other adepts. The Rosicrucians pretended to be able to transmute metals, to prolong life,

ROSE WINDOW.

and to know what was passing in distant places. Many contradictory hypotheses have been brought forward regarding the Rosicrucians, and as it is admitted that their secret was never revealed, it is open to doubt if there was one to reveal. They are said to have died out in the 18th century.

Rosini, Giovanni, an Italian litterateur; born in Lucignano, Tuscany, Italy, June 24, 1776. His poem entitled "The Marriage of Jupiter and Latona" (1810) written on the occasion of the marriage of Napoleon with Maria Louisa, was awarded an imperial prize of $2,000. He was the author of many works of prose and poetry. He died May 16, 1855.

Rosmini, Antonio Rosmini-Serbati, an Italian philosopher; born of noble family at Roveredo in the Italian Tyrol, March 25, 1797. He entered the priesthood and founded the charitable order of Rosminians which has branches in America, Italy, France, and Britain. He is regarded as the founder of modern Idealism in Italy. The chief points of his system are fully treated in his "New Essay on the Origin of Ideas," translated into English (1883). He was a most voluminous writer on religious and military subjects, as well as on philosophy. Died in Milan, Italy, 1827.

Ross, "Charlie," the victim of a case of kidnapping, thirty years ago, which has not yet lost interest. On July 3, 1874, Charles Ross, son of Christian K. Ross, and aged about four years, while playing near his home in the suburbs of Philadelphia, was carried away by two men. The abductors, in newspaper advertisements, demanded $20,000 for his return. Owing to the efforts of the police to capture them the boy was never returned, although the father raised the $20,000, and sought to exchange it for the boy. His captors are supposed to have been two men, William Mosher and William Douglas, who were afterward killed while robbing a house on Long Island, and it is believed the boy died of neglect on a sloop in Newark Bay, on which they held him prisoner.

Ross, Clinton, an American novelist; born in Binghamton, N. Y., July 31, 1861; graduated at Yale in 1884. He has written: "The Silent Workman"; "Heroes of Our War With Spain"; "Bobbie McDuff," etc.

Ross, Sir James Clark, an English Arctic and Antarctic explorer; born in London, England, April 15, 1800. He entered the British navy at the age of 12, accompanied his uncle, Sir John Ross, on his two voyages in search of a N. W. passag and in the interval between them a companied Capt. William Parry his three Arctic voyages. He w promoted to the rank of post-capta in 1834, particularly for the discove of the North magnetic pole in 183 He commanded the expedition in t "Erebus" and "Terror" to the An arctic Ocean in 1839–1843; and his return published a narrative that voyage, which had contribut largely to geographical and scientif knowledge generally. Captain Ro was knighted for his services, and r ceived numerous other honors. 1848 he made a voyage in the "Ente prise" to Baffin Bay in search of S John Franklin. He died in Aylesbur England, April 3, 1862.

Ross, Sir John, an English Arct navigator; born in Inch, Wigtow shire, Scotland, June 24, 1777. 1817 he accepted the command of a admiralty expedition to search for N. W. passage but was unsuccessfu His next expedition, in the steam "Victory," set out in May, 1829. Ro entered Prince Regent Inlet and di covered and named Boothia Felix a King William Land. In 1832 he w forced to abandon his ships, and and his crew suffered great hardshi before they were picked up in A gust, 1833, by his old ship, the "Is bella." In 1834 Captain Ross w knighted, and in the following ye published a narrative of his secon voyage. From 1839 till 1845 he w consul at Stockholm. In 1850 he ma a last Arctic voyage in the "Felix in a vain endeavor to ascertain t fate of Sir John Franklin. He b came a rear-admiral in 1851, and di in London, England, Aug. 30, 1856.

Rosse, William Parsons, 3 Earl of, an English astronome born in York, England, June 1 1800. In 1827 he constructed a tel scope, the speculum of which had diameter of three feet, and the succe and scientific value of this instrume induced him to attempt to cast speculum twice as large. After i numerable difficulties, and many fa ures, Lord Rosse succeeded in 18 in perfecting machinery which turn out the huge speculum, weighing thr tons, without warp or flaw. It w

hen mounted in his park at Parsons-own, at a cost of $150,000 on a tele-cope 54 feet in length with a tube feet in diameter. A series of cranks, wivels, and pulleys enables this huge nstrument to be handled almost with as much ease as telescopes of ordinary ize. The sphere of observation was mmensely widened by Lord Rosse's nstrument, which has been chiefly used in observations of nebulæ. He lied Oct. 31, 1867.

Rossetti, Gabriele, an Italian poet and critic; born in Vasto, Abruzzo Citeriore, then forming part of the kingdom of Naples, Feb. 28, 1783. When King Ferdinand abrogated the constitution in 1821, the Constitutionalists were proscribed and persecuted, Rossetti among them. Rossetti made his escape from Naples with the kindly connivance of the British admiral, Sir Graham Moore, who shipped him off to Malta in the disguise of a British naval officer. In Malta he was treated with great liberality and distinction by the governor, and toward 1824 he went to London, with good recommendations, to follow the career of teacher of Italian, and follow his favorite studies.

In 1826 he married Frances Mary Lavinia Polidori, daughter of a Tuscan father and English mother; soon afterward he was elected Professor of Italian in King's College, London. In London Rossetti lived a studious, laborious, and honorable life, greatly respected by his pupils and by Italian residents and visitors. His health began to fail in 1842, and his sight became dim, one eye being wholly lost. After some attacks of a paralytic character he died in London, April 26, 1854. His son, Gabriel Charles Dante Rossetti, born May 12, 1828, died April 9, 1882, gained high reputation as poet and painter, and his daughter, Christina Georgina, born in 1830, also wrote poetry of a high order.

Rossini, Gioacchino Antonio, one of the most popular, and perhaps the greatest Italian composer of operas; born in Pesaro, Italy, Feb. 9, 1792. He produced some light operatic pieces, the only one of his juvenile efforts that has lived is the "Lucky Trick," which came out in 1812. "Tancred," brought out at Venice in 1813, when he was scarcely more than 20 years of age, all at once made his name famous. Thus encouraged, Rossini produced a number of other works in quick succession, generally inferior to the work which brought him into popularity. In 1816 he produced his world-famous "Barber of Seville" at Rome. Among Rossini's other works which still keep the stage are: "Othello," "Moses in Egypt," "The Lady of the Lake," "Count Ory," and "William Tell." This last, the greatest and most original of his works, was written at the age of 37, and with it closed the career of Rossini as a composer. He died in his villa in Passy, near Paris, Nov. 13, 1868.

Rossiter, Thomas Pritchard, an American artist; born in New Haven, Conn., Sept. 29, 1817. He studied in Rome in 1840–1846, and on his return opened a studio in New York city. He became an Academician in 1849. In 1860 he removed to Cold Spring, N. Y., where he resided till his death. He devoted himself to historical and scriptural subjects. He had admirable taste in coloring. He died in Cold Spring, N. Y., May 17, 1871.

Rostand, Edmond, a French poet; born in Marseilles, France, in 1868; was educated in Paris; and in 1894 his first play "The Romanticists" was produced at the Comedie Francaise. It was an instantaneous success and was followed by "Princess Lontaine"; "The Samaritan"; "Cyrano de Bergerac"; and "L'Aiglon." The last two were translated into English and played in the United States by Richard Mansfield and Maude Adams; and in 1901 Coquelin and Sarah Bernhardt, the leading French actor and actress, presented the original versions in the United States. Rostand's versification is of remarkable beauty. On May 30, 1901, he was elected one of the 40 "immortals" of the French Academy. He was the youngest candidate ever elected.

Roster, in military language, a term implying the seniority list from which officers are detailed for duty in regular succession; hence, occasionally, a list showing the turn or rotation of service or duty, as in the case of military officers and others who relieve or succeed each other.

Rostrum, plural **Rostra,** a scaffold or elevated platform in the Forum at Rome, from which public orations, pleadings, funeral harangues, etc., were delivered; so called from the rostra or beaks of ships with which it was ornamented. Also a pulpit, platform, or elevated place from which a speaker, as a preacher, an auctioneer, etc., addresses his audience.

Rota Romana, the highest ecclesiastical court of appeal for all Christendom during the supremacy of the Popes. With the dwindling temporal power of the Popes it gradually lost all authority in foreign countries.

Rotation, in astronomy, the turning round of a planet on its imaginary axis, like that of a wheel on its axle. The rotation of the earth is performed with a uniform motion from W. to E. and occupies the interval in time which would elapse between the departure of a star from a certain point in the sky and its return to the same point again. The only motions which interfere with its regularity are the precession of the equinoxes and nutation. The time taken for the rotation of the earth measures the length of its day. So with the other planets. The sun also rotates as is shown by the movement of spots across its disk.

Rotation of Crops, the cultivation of a different kind of crop each year, for a certain period, to prevent the exhaustion of the soil. If a plant requiring specially alkaline nutriment be planted year after year in the same field or bed, it will ultimately exhaust all the alkalies in the soil and then languish. But if a plant be substituted in large measure requiring siliceous elements for its growth, it can flourish where its alkaline predecessor is starved. Meanwhile the action of the atmosphere is continually reducing to a soluble condition small quantities of soil, thus restoring the lost alkalies.

Rothschild (red shield), the name of a Jewish family of European bankers and capitalists, the enormousness of whose aggregate wealth has passed into a proverb. The founder of this race of financiers, Meyer Anselm Rothschild, born at Frankfort-on-the-Main in 1743, died there in 1812, after having accumulated the most gigantic fortune ever possessed by a single individual up to his day. Commencing the world as a small trader, he by his probity, frugality, and superior business qualifications, eventually became the banker of monarchs and the creditor of states. Of the five sons who succeeded to the vast inheritance he bequeathed them, the eldest, Anselm (born 1773, died 1855), was his father's partner and successor at Frankfort. The second, Solomon (born 1774, died 1855), became established as the representative of the house of Rothschild at Vienna. The third, Nathan Meyer, (born 1774 died 1836), settled as the London partner, and became the leading member and ablest financier of the family. The fourth, Charles (born 1788, died 1855), filled the representation of the firm at Vienna. Lastly, James (born 1792, died 1869) eventually took up his residence in Paris, where he died, leaving a fortune estimated at $200,000,000. Within a period of less than 12 years the Rothschilds advanced in loans as follows: to England, $200,000,000; Austria, $50,000,000; Prussia, $40,000,000; France, $80,000,000; Naples $50,000,000; Russia, $25,000,000 Brazil, $12,000,000; besides some $5,000,000 to smaller States; or, altogether, the almost incredible amount of $462,000,000. The colossal financiering operations of the house are now conducted by descendants of the above-mentioned brothers, and the firm has banking houses and representatives in the leading cities of the civilized world.

Rotifera, in zoölogy, wheel-animalcules; a group of Metazoa. They are microscopic animals, contractile, crowned with vibratile cilia at the anterior part of the body, which, by their motion, often resemble a wheel revolving rapidly. Intestine distinct, terminated at one extremity by a mouth, at the other by an anus; generation oviparous, sometimes viviparous. The nervous system is represented by a relatively large single ganglion, with one or two eye-spots, on one side of the body, near the mouth, and there are organs which appear to be sensory. They are free or adherent, but never absolutely fixed animals.

Rotterdam, the chief port and second city of Holland; on the Nieuwe Maas or Meuse, at its junction with the Rotte; about 14 miles from the North Sea, with which it is also directly connected by a ship canal (Nieuwe Waterweg) admitting the largest vessels and not interrupted by a single lock. The town is intersected by numerous canals, which permit large vessels to moor alongside the warehouses in the very center of the city. These canals, which are crossed by innumerable drawbridges and swing bridges, are in many cases lined with rows of trees; and the handsome quay on the river front, 1¼ miles long, is known as the Boompjes ("little trees"), from a row of elms planted in 1615 and now of great size. Many of the houses are quaint edifices, having their gables to the street, with overhanging upper stories. Rotterdam contains shipbuilding yards, sugar refineries, distilleries, tobacco factories, and large machine works; but its mainstay is commerce. It not only carries on a very extensive and active trade with Great Britain, the Dutch East and West Indies, and other transoceanic countries, but, as the natural outlet for the entire basin of the Rhine and Meuse, it has developed an important commerce with Germany, Switzerland, and Central Europe. Rotterdam received town rights in 1340, and in 1573 it obtained a vote in the Estates of the Netherlands; but its modern prosperity has been chiefly developed since 1830. Pop. 309,309.

Rouble, the unit of the Russian money system. The present silver rouble is equivalent to about 80½ cents in United States gold.

Rouen, a city of France, capital of the department of Seine-Inferieure, and formerly of the province of Normandy, on the Seine, 44 miles from its mouth, and 67 N. W. of Paris. It is situate on the right bank of the Seine, in a fertile, pleasant, and varied country. The streets, though in general straight, are narrow and dirty, and some of the houses are of wood. The most agreeable part of the town is that which adjoins the Seine. The public buildings of interest are, the cathedral, containing many old monuments, and one of the finest specimens of Gothic architecture in France; the Church of St. Ouen, likewise a fine Gothic building, situate nearly in the center of the town; and that of St. Maclou, considered a masterpiece of its kind. Manufactures, cotton goods, woolens, linens, iron ware, paper, hats, pottery, wax, cloth, and sugar refining. Dyeing, both of woolens and cotton, is also conducted with care and success. Pop. 113,219.

Rouge, in ordinary language, a cosmetic prepared from dried flowers and used to impart artificial bloom to the cheeks or lips.

Rouge et Noir (French, "red and black"), Trente-un ("31"), or Trente et Quarante ("30 and 40"), a modern game of chance, played by the aid of packs of cards on a table covered with green cloth. This game superseded faro and biribi in France about 1789, but along with roulette was forbidden by law in 1838.

Rough Riders, a name coined by William F. Cody ("Buffalo Bill"), for use in his "Wild West" show, which included a "Congress of the rough riders of the world." The first rough riders were the men who carried messages over the West in the early frontier times before the pony express was organized in 1859. In the army the original rough riders were the 1st Regiment of United States Volunteer Cavalry, organized for the war with Spain by Surgeon Leonard Wood, who was commissioned colonel, with Theodore Roosevelt as lieutenant-colonel. The name was applied also to the 2d United States Volunteer Cavalry. The name was given to these regiments on account of their being composed largely of Western ranchmen.

Roulette (French, "a little wheel"), a game of chance which from the end of the 18th century till the beginning of 1838 reigned supreme over all others in Paris. It continued to be played at German watering places till 1872, when it ceased in terms of an act passed four years before. Roulette then found a home at Monaco.

Round, in music, a short composition in which three or more voices starting at the beginning of stated successive phrases, sing the same music

in unison or octave (thus differing from the canon).

Roundelay, a sort of ancient poem, consisting of 13 verses, of which eight are in one kind of rhyme and five in another. It is divided into couplets, at the commencement of the second or third of which the beginning of the poem is repeated, and that, if possible, in an equivocal or punning sense. Also, a song or tune in which the first strain is repeated. Also, the tune to which a roundelay was sung.

Rounders, a game played by two parties or sides, somewhat similar to baseball.

Roundhead, a term applied by the Cavaliers or adherents of Charles I., during the Civil War of 1642, to the Puritans or adherents of the Parliamentary party, from their wearing their hair cut short, while the Cavaliers allowed their hair to fall onto their shoulders.

Round Robin, a name given to a protest or remonstrance signed by a number of persons in a circular form, so that no one shall be obliged to head the list.

Round Table, Knights of the, According to tradition, there reigned in Britain, toward the end of the 5th century, a Christian king, the British Uther-Pendragon, who had for a counsellor a powerful, wise, and benevolent enchanter, named Merlin, who advised him to assemble all his knights distinguished for piety, courage, and fidelity toward him, at feasts, about a round table, which should be sufficiently large to receive 50 knights, but at which at first only 49 should be seated, room being left for one yet unborn. This was Arthur, or Artus, son of the king by Igerna, whom the king, by the magic power of Merlin, was permitted to enjoy under the form of her husband. Merlin had exacted a promise that the education of the prince should be intrusted to him, and he accordingly instructed him in everything becoming a brave, virtuous, and accomplished knight. Arthur in due time occupied the empty seat at the Round Table; and under him it became the resort of all valiant, pious, and noble knights, admission to it becoming the reward of the greatest virtues and feats of arms.

Rouquette, Adrien, an American Roman Catholic priest, poet, and missionary; born in New Orleans, La., in 1813. He was educated in France, graduated in Philadelphia, and ordained a priest by Bishop Blanc. He gave many years to missionary work among the Choctaws of St. Tammany. He was familiar with many tongues and contributed much to French, American, and Italian literature. Several volumes of his verses and two or three prose collections were published in French, and he was a frequent contributor to the local press. He died in 1887.

Rousseau, Jean Jacques, a Swiss-French philosopher, one of the most celebrated and influential writers of the 18th century; born in Geneva, Switzerland, June 28, 1712. In 1741 he went to Paris, and in 1743 obtained the post of secretary to the French ambassador at Venice. This office he resigned, and returned to Paris in 1745, to lead a precarious life, copying music and studying science. In 1750 his essay, in which he adopted the negative side of the question whether civilization has contributed to purify manners, won a prize offered by the Academy of Dijon, and brought him for the first time into general notice. In 1752 he brought out a successful operetta (the music by himself), and soon after a celebrated "Letter on French Music."

In 1754 he revisited Geneva, but later returned to Paris where he wrote a sort of novel, "Julia, or the New Heloise," which was published in 1760, being followed by "The Social Contract," a political work, and "Emile, or on Education," another story, in 1762. The principles expressed in these works stirred up much animosity against their author. The confession of faith of the Savoyard vicar in Emile was declared a dangerous attack on religion, and the book was burned both in Paris and Geneva. Persecution, exaggerated by his own morbid sensibility, forced Rousseau to flee to England, where he was welcomed by Hume, Boswell, and others in 1766. A malicious letter by Horace Walpole unluckily aroused his suspicions of his English friends, and in May, 1767, he returned to France, where his presence was now tolerated

He lived in great poverty, supporting himself by copying music and publishing occasional works. In May, 1778, he retired to Ermenonville near Paris. His celebrated "Confessions" appeared at Geneva in 1782. The chief importance of his works lies perhaps in the fact that they contain the germ of the doctrines which were carried out with such ruthless consistency in the French Revolution. Rousseau was also a musical author and critic of some importance. He died in Ermenonville, July 2, 1778, not without suspicion of suicide.

Rove Beetles, or **Cocktails,** the popular name of certain beetles. The common species is the Ocypus olens, the black cocktail, or devil's coach horse. These beetles are carrion feeders.

Rowan, Andrew Summers, an American army officer; born in Gap Mills, Va.; was graduated at the United States Military Academy in 1881, and first came into prominence in 1898, when he was sent to communicate with General Garcia, after the declaration of the Spanish-American War. He landed from an open boat near Turquino Peak, Cuba, on April 24, 1898; marched through swamps and underbrush to the mountains, reached General Garcia, and successfully executed his mission, bringing back full information as to the insurgent army. For this act he was promoted to the rank of 1st lieutenant, U. S. A. After the war he was assigned to duty in the Philippine Islands.

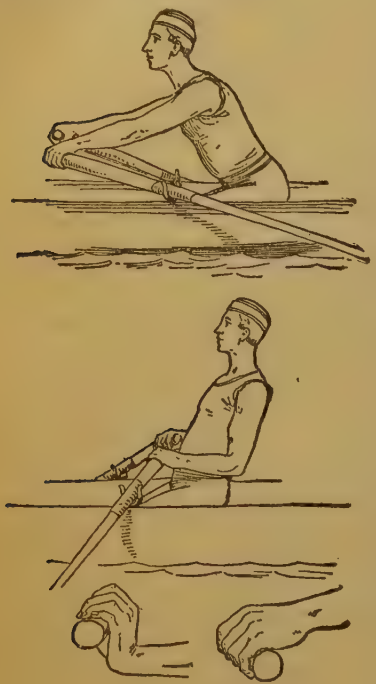
Rowan, Stephen Clegg, an American naval officer; born near Dublin, Ireland, Dec. 25, 1808; came to the United States when a boy, and on Feb. 1, 1826, was appointed a midshipman in the navy. He was promoted lieutenant, March 8, 1837; took part in the capture of Monterey and San Diego in the Mexican War, and, as executive officer of the "Cyane," in the bombardment of Guaymas. In the battle of the Niesa, Upper California, he commanded the naval battalion under Commodore Stockton, and was especially commended for his skill in leading the landing party that made a successful attack on a Mexican outpost near Mazatlan. He was promoted commander Sept. 14, 1855. At the outbreak of the Civil War he was on the "Pawnee," with which he engaged the Confederate battery at Acquia Creek on May 25, 1861; this being the first naval action of the war. He was promoted both captain and commodore, July 16, 1862, for gallantry in the Goldsborough expedition to North Carolina, and the engagements on Roanoke Island and Albemarle Sound. He forced the surrender of the forts at Newbern, N. C., and by the capture of Fort Mason restored National authority in the waters of North Carolina. He commanded the "New Ironsides" in the engagements with Forts Wagner, Gregg, and Moultrie; received a vote of thanks from Congress; and was promoted rear-admiral, July 25, 1866. After the close of the war Rear-Admiral Rowan was appointed to various executive offices; was promoted vice-admiral Aug. 15, 1870; and was chairman of the Lighthouse Board at the time of his retirement, Feb. 26, 1889. He died in Washington, D. C., March 31, 1890.

Rowe, George Fawcett, an English American actor and playwright; born in Exeter, England, in 1836. He came to the United States from Australia in 1865. His first appearance on the American stage was at the Olympic Theater, New York, where in February, 1865, he appeared as D'Artagnan, in the dramatizations of Dumas's "Three Musketeers," one of his best characters. He wrote the play "Geneva Cross." He died in New York city, Aug. 29, 1889.

Rowing, the propulsion of a boat by oars. The oarsman sits with his face to the stern of the boat, his feet planted flush against his "stretcher" or footboard, and the handle of the oar in his hands, the loom of the oar resting in the rowlock, the "button" being inside the thowl-pin.

Rowland, Henry Augustus, an American scientist; born in Honesdale, Pa., Nov. 27, 1848; was graduated at the Rensselaer Polytechnic Institute in 1870; was made Professor of Physics at Johns Hopkins University in 1876. He was a member of the Electrical Congress in Paris in 1881; served on the jury of the Electrical Exhibition held there that year, and was the inventor of a process of

ruling large diffraction gratings directly on concave mirrors. He was made president of the American Physical Society in 1889, and received honorary degrees from Yale University, in 1895, and from Princeton University in 1896. He died in Baltimore, Md., April 16, 1901.



POSITIONS IN ROWING.

1, entering the water; 2, end of the stroke; 3, positions of the wrists in feathering the oar.

Rowson, Susanna, an English-American novelist; born in Portsmouth, England in 1762. She appeared on the American stage for about a year; after which she settled in Boston, opening a school and turning her attention to literary pursuits. She wrote "Charlotte Temple: A Tale of Truth," which had an immediate and great success, and has long been a popular classic in America; and its sequel "Lucy Temple; or, the Three Orphans." She died in Boston, Mass., March 2, 1824.

Royal Family. By the law of England royal rank is conceded to the wife or husband, children or other descendants, and collateral relatives of the sovereign. The husband of a reigning queen does not acquire any share in her prerogative rights, but it is usual to grant him special precedence; King Philip and William III. were associated in title and power with their wives by act of Parliament. Of the sovereign's children, the eldest son is, of course, heir-apparent; he is born Duke of Cornwall, and he is always created Prince of Wales. The Prince and Princess of Wales and the Princess Royal (the eldest daughter of the sovereign) are within the protection of the statute of Edward III. relating to treason. An heir-presumptive to the throne has no special rank or precedence as such. The younger children of the sovereign take rank after the heir-apparent; by a statute of 1540 a place is assigned to them at the side of the cloth of estate in the Parliamentary chamber; it is customary to confer peerages on all the younger sons. On a reference by George II. to the House of Lords it was held that Edward, Duke of York, second son of the Prince of Wales, was entitled to a place among the king's children. Members of the royal family enjoy considerable privileges; they pay no tolls or duties, and they are exempted from succession duty and some other taxes.

Royal Household, those persons who hold posts in connection with the household of the British sovereign, including the keeper of the privy-purse and private secretary, lord-steward, treasurer, comptroller, master of the household, lord chamberlain, vice-chamberlain, master of the horse, captains, of the gentlemen-at-arms, and yeomen of the guard, master of the buck-hounds, earl-marshal, grand falconer, lord high almoner, hereditary grand almoner, mistress of the robes, ladies of the bedchamber, bedchamber-women, maids of honor, lords-in-waiting, master of ceremonies, physicians in ordinary, poet laureate, etc.

Royal Institution, an institution founded in London, England, by Count

Rumford, Sir Joseph Banks, etc., March 9, 1799, and incorporated Jan. 13, 1800. It was reconstituted in 1810. The well-known objects are to diffuse knowledge, to facilitate the general introduction of mechanical inventions, and teach by lectures and experiments the application of science to the common purposes of life. It has, as a rule, had for its lecturers some of the first scientific men of the age; e. g., Thomas Young, Davy, Brande, Faraday, Tyndall, Frankland, and Rayleigh. It maintains professors of natural philosophy, chemistry and physiology, and has laboratories (including since 1896 the Davy-Faraday research laboratory presented by Dr. Ludway Mond).

Royal Marriage Act, an act of George III. passed by the British Parliament in 1772, which forbids all descendants of George II., other than the issue of princesses married into foreign families, to contract marriage without the consent of the sovereign, signified under the great seal. But such descendants, if above the age of 25, may dispense with the consent of the crown, unless both Houses of Parliament expressly declare their disapproval within 12 months after notice of the intended marriage has been given to the privy council. Marriages otherwise entered into are void.

Royal Observatory, Greenwich, the famous English observatory founded by Charles II. in 1675. The first observation was made Sept. 19, 1675. The Director of the Observatory is styled the Astronomer Royal, and is under the official control of the Admiralty, but receives his appointment directly from the Prime Minister, and holds office by warrant under the royal sign manual. Longitude is commonly reckoned from here.

Royal Society (London), a society for prosecuting research in general and physico-mathematical science in particular, founded in 1660.

Many of the most important scientific achievements and discoveries have been due to its enlightened methods. It deservedly enjoys an influential and semi-official position as the scientific adviser of the British government, and not only administers the $20,000 annually voted by Parliament for scientific purposes, but has given suggestions and advice which have borne valuable fruit, from the voyage of Captain Cook in the "Endeavor" in 1768 down to the "Challenger" expedition, more than a century later. The roll of the Royal Society contains practically all the great scientific names of its country since its foundation.

Royal Society (Edinburgh), a Scotch society of a similar type to the English institution, which was incorporated in 1783, having been developed from the Philosophical Society of Edinburgh, commenced in 1739. Among its early members were Hume, Reid, Edmund Burke, Hutton, Dugald Stewart, and James Watt; and among its presidents have been Sir Walter Scott, Sir David Brewster, the Duke of Argyll, Lord Moncrieff, and Sir William Thomson.

Royal Society of Literature, a society founded in England under the patronage of George IV., in 1823, and chartered in 1826. It awards gold medals.

Royal University of Ireland, an institution founded in 1880 in pursuance of the provisions of the University Education (Ireland) Act, 1879, to take the place of the Queen's University, a similar institution established in connection with the Queen's Colleges. The Royal University corporation consists of a chancellor, a senate, and graduates, the government being vested in the chancellor and senators, the latter not to exceed 36 in number. It has power to confer all such degrees and distinctions as are conferred by any university in the United Kingdom except in theology, and these may be bestowed on all male and female students who have matriculated in the university and passed the prescribed examinations, no residence in any college or attendance at any course of instruction in the university being obligatory on any candidate for a degree other than a degree in medicine or surgery, the university in this respect resembling that of London. An act of 1881 provided for the payment of $100,000 a year out of the surplus funds of the Irish Church for the purposes of the university, which has its seat at Earlsfort Terrace, Dublin. The university has a considerable staff of examiners, but of course no professors.

Royce, Josiah, an American educator and author; born in Grass Valley, Cal., Nov. 20, 1855. He became Professor of the History of Philosophy in Harvard in 1892, and published: "A Primer of Logical Analysis"; "The Religious Aspect of Philosophy"; "The Conception of Immortality"; and many articles and lectures.

Royer-Collard, Pierre Paul, a French statesman; born in Sompuis, France, June 21, 1763. In 1811 he was appointed Professor of Philosophy in Paris, and exercised an immense influence on the philosophy of France. He was appointed president of the Commission of Public Instruction in 1815, but resigned that post in 1820; in 1815, also, he returned to political life as deputy for the department of Marne. The French Academy opened its doors to him in 1827; and in 1828 he was named president of the Chamber of Representatives, and in that capacity presented the address of the 221 deputies (March, 1830) withdrawing their support from the government, which the king refused to hear read. Next day the Chamber was prorogued. From 1842 Royer-Collard completely withdrew from public life. He never was a writer, and he became a philosopher only by accident; his true interest in life was politics, his real eminence as a political orator after the ancient pattern rather than that of the modern parliamentary debater. He died in his county seat, Chateauvieux, near St. Aignan, Loir-et-Cher, Sept. 4, 1845.

Ruatan, or **Roatan,** an island of Central America, in the Bay of Honduras; area, about 240 square miles. Surface, somewhat elevated and well wooded; soil, fertile. The shores abound in fish and turtles, and near the S. extremity is a good harbor.

Rubber Groves, a name applied to the tracts of territory where the rubber of commerce is obtained. While the india-rubber of commerce has been obtained from any different parts of the globe, the world has been compelled to look to Central and South America for the bulk of its supply. South America, especially Brazil, is the territory on which the commercial world relies. It is said there is danger of this supply giving out.

Rubble, a common kind of masonry, in which the stones are irregular in size and shape.

Rubens, Peter Paul, a distinguished Flemish painter; born in Siegen, Westphalia, June 29, 1577. He went to Antwerp in 1608, and was soon after made court painter to the Archduke Albert, Spanish governor of the Low Countries. In 1620 he was employed by the Princess Mary de Medici to adorn the gallery of the Luxembourg with a series of paintings illustrative of the principal scenes of her life. While thus engaged he became known to the Duke of Buckingham, who purchased his museum. He was afterward employed by the Infanta Isabella and the King of Spain in some important negotiations which he executed with such credit as to be appointed secretary of the privy council. He acquired immense wealth, and was twice married, the second time, in 1631, to a lovely girl of 16. Rubens, beyond all comparison, was the most rapid in execution of all the great masters, and was incontestably the greatest perfector of the mechanical part of his art that ever existed. His works are very numerous, and very diversified in subject. There are nearly 100 in the Picture Gallery at Munich. "The Descent from the Cross," at Antwerp, is perhaps his masterpiece. He died in Antwerp, May 30, 1640.

Rubicon, a river in North Italy (now the Fiumicino, a tributary of the Adriatic), famous in Roman history, Cæsar having by crossing this stream (49 B. C.), at that time regarded as the N. boundary of Italy, finally committed himself to the civil war. Hence the phrase "to pass the Rubicon" is to take the decisive step by which one commits one's self to a hazardous enterprise.

Rubidium, a metal much resembling cæsium, with which it was discovered in 1860, by Bunsen and Kirchoff, during the analysis of a spring of water which contained these metals in minute quantities. Rubidium has since been found in small quantities in other mineral waters, in lepidolite, and in the ashes of many plants. This metal is closely related, in properties, to potassium, but is more easily fusible and convertible into vapor, and actually surpasses

that metal in its attraction for oxygen, rubidium taking fire spontaneously in air. It burns on water with exactly the same flame as potassium.

Rubinstein, Anton Gregor, a Polish musician; born near Jassy, Rumania, Nov. 28, 1829. He was trained to music in Moscow by his mother and a master. Liszt heard him, "an infant prodigy," play in Paris in 1841, recognized his genius, and encouraged him to play in other cities. After some further "touring" he gave himself to serious study in Berlin and Vienna, and in 1848 settled in St. Petersburg as teacher of music. At St. Petersburg he succeeded in getting a musical conservatory founded (1862) and became its director. But his concert tours engrossed a good deal of his time, and in 1867 he resigned the directorship of the conservatory. In 1872 he went to the United States and had an enthusiastic reception. He ended his concert tours in 1886. He was induced in the following year to resume the directorship of the conservatory at St. Petersburg. From the Russian government he received a patent of nobility and other honors.

He was a strongly pronounced opponent of the principles of Wagner. As a pianist he held the highest rank, being usually reckoned the greatest since Liszt. He ceased playing in public some time before his death, which occurred in Peterhof, Russia, Nov. 20, 1894.

Rubric, in the language of the old copies of MSS. and of modern printers, any writing or printing in red ink; the date and place in a title-page being frequently in red ink, the word rubric has come to signify the false name of a place on a title-page. Thus, many books printed at Paris bear the rubric of London, Geneva, etc.

Ruby, a term applied popularly to two distinct minerals — the pyrope and the spinelle ruby, both of which are much valued as gems. The pyrope is a silicate of magnesia and alumina, and occurs chiefly in Saxony, Bohemia and Scotland. The spinelle ruby and its varieties, the orange-red rubicelle, and the violet or brown almandine, are aluminates of magnesia, with different proportions of iron and chromium. They are found mainly in Ceylon at Ava and in other parts of the East Indies. Rubies are wonderfully imitated.

The ruby is one of the most exquisite products of nature, but it is becoming rare and more rare to find it perfect. A ruby may bring 10 or 20 times the price of a diamond of the same weight if it is really of a superior quality. In general the cutting as a brilliant is alone suitable for a fine ruby. The ruby is very hard, almost as hard as the sapphire.

The most beautiful rubies come from Ceylon, India, and China. There are mines in Burma which supply at least one-half of the world's production. The Burmese mines were reopened in 1900 under a London company. The mines of Pegu are nearly exhausted, or but little worked today. The regions where they are situated are dangerous of approach; besides, in the States of the Grand Mogul, the exportation of rubies is forbidden till they have been exhibited to the sovereign, who retains the most beautiful. The stone known under the name of the ruby of Siam is distinguished by its deep red color, somewhat resembling the garnet.

Ruby Throat, the Trochilus colubris a species of humming bird, so named from the brilliant ruby red color of its chin and throat. In summer it is found in all parts of North America, up to lat. 57° N., being thus remarkable for its extensive distribution.

Ruckert, Friedrich, a German poet; born in Schweinfurt, Bavaria, May 16, 1788; was educated there and at Wurzburg. For some years he led a wandering life studying philology and poetry. His most popular books are the collection of lyrics entitled "Springtime of Love," and the reflective poems gathered together as "The Wisdom of the Brahman." He died Jan. 31, 1866.

Rudder, primarily, an oar; specifically, the instrument by which a ship is steered, being that part of the helm which consists of a piece of timber which enters the water, and is attached to the sternpost by hinges, on which it turns.

Rudder Fish, a fish allied to the mackerel, very common in the Atlantic and Pacific Oceans, so named

from its habit of swimming around the sterns of ships, attracted, doubtless, by the refuse thrown overboard. The flesh is said to be coarse in flavor.

Rudini, Antonio Starrabba di, Marquis, an Italian statesman; born in Palermo, Sicily, in 1839. In 1869 he was minister of the interior and member of the Chamber of Deputies, serving in the Parliament till called to succeed Crispi as premier, Feb. 7, 1891. During the Mafia difficulty in New Orleans he recalled the Italian minister from Washington to enforce his demands on the United States government. He succeeded Crispi in 1891, was succeeded by Crispi in 1892, and was again made premier in 1896, when disasters to the Italian army in Abyssinia caused Crispi's fall. His third term of office closed June 29, 1898.

Rudolf I., or **Rudolph,** founder of the present imperial dynasty of Austria; born in Limburg castle in the Breisgau, Germany, May 1, 1218. His possessions were greatly increased by inheritance and by his marriage, till he was the most powerful prince of Swabia. In 1273 the electors chose him to be German king; as, never having been crowned by the Pope, he was not entitled to be called kaiser or emperor. His accession was opposed by none; the Pope's consent was secured at the price of certain rights already parted with by Rudolf's predecessors. Rudolf spent the greater part of his life that remained in suppressing the castles of the robber knights and putting an end to their lawless practices. He died in Spires, July 15, 1291, and was buried in the cathedral there.

Rue. The common rue is a half-shrubby plant, two or three feet high, of a fetid odor and an acrid taste. The bluish-green leaves are pinnate, the flowers yellow; a native of Southern Europe, but grown in gardens in the United States, the East and West Indies, etc.

Ruff, a well known migratory bird that is a spring and summer visitor in North Europe, having its winter home in Africa. It is rather larger than a snipe; general plumage ash-brown, spotted or mottled with black, but no two specimens are alike. In the breeding season the neck is surrounded by a frill or ruff of numerous long black feathers, glossed with purple, and barred with chestnut.

Ruffe, a fish from the rivers of Europe. It is olive-green, marbled and spotted with brown, and resembles the perch in habits. The name is said to be derived from the harsh sensation caused by its ctenoid scales.

RUE.

Ruffed Grouse, a North American species of grouse of the same genus as the hazel grouse of Europe. It is named from the tufts of feathers on the sides of its neck, and frequents forests and thickets.

Rugby, a town in Warwickshire, England; 83 miles N. W. of London and 30 E. S. E. of Birmingham. At the foot of the hill on which it stands the river Swift gave Wyclif's ashes to the Avon; close by at Ashby and at Dunchurch the Gunpowder Plot was hatched; the battlefield of Naseby was viewed by Carlyle from its school house in 1842, a few days before Arnold's death; it is within a drive of Stratford-on-Avon, Coventry, Kenilworth. It is at once the center of a great hunting district and the seat of

a world-famous public school. This probably accounts for the large number of residential houses there. The school was founded in 1567 by Lawrence Sheriff, a grocer and a staunch supporter of Queen Elizabeth, by a gift of property in Manchester Square, London. After maintaining its position for some time as a good school for the Warwickshire gentry and a few others, specially under Dr. James and Dr. Wool, it became of national reputation under Dr. Arnold, who in raising his school raised at the same time the dignity of his whole profession. Since his time the school has never lacked able teachers, remarkable for independence of mind.

Ruger, Thomas Howard, an American military officer; born in Lima, N. Y., April 2, 1833; was graduated at the United States Military Academy in 1854; became lieutenant-colonel of the 3d Wisconsin regiment in June, 1861; won distinction in numerous engagements during the Civil War; suppressed the draft riots in New York city in 1863; was brevetted Major-General of volunteers, Nov. 30, 1864; promoted colonel, U. S. A., in 1867; Brigadier-General in 1886; and Major-General in 1895; and was retired in 1897.

Rule Nisi, or **Rule to Show Cause,** in United States and English law, an order granted by the court on an interlocutory application, directing the party opposed to the applicant to do or abstain from some act, unless he can show cause why the order should not be obeyed. If cause is shown, the order is "discharged," otherwise it is made "absolute," and the party ruled must obey on pain of attachment for contempt.

Rules of the Road, the official designation of regulations adopted by national or international authorities for the management of vessels in storms, fogs, or other danger. Under act of the United States Congress, in 1896, the rules already established were considerably changed to comport with the schedule to be observed by vessels of all civilized nations on and after July 1, 1897. These rules apply also to inland waters, excepting the Great Lakes, for which a special set has been devised.

Ruling Machines, instruments used for ruling paper, metal, etc. The first machine of this kind was invented by a Dutchman, resident in London, in 1782, and was subsequently greatly improved by Woodmason, Payne, Brown, and others. F. A. Nobert devised a ruling machine in 1845 for the production of microscopical test plates, diffraction gratings, and micrometers, etc., and more recently Benjamin Day, a New York artist, patented one for use by artists.

Rum, a spirit distilled chiefly in the West Indies from the fermented skimmings of the sugar-boilers and molasses, together with sufficient cane juice to impart the necessary flavor. Its peculiar flavor in due to butyric ether. Caramel is added for coloring. Much of the rum sold is merely plain spirit colored with burned sugar and flavored with rum flavoring. The Medford rum manufactured in Massachusetts is largely exported to Africa.

Rumania, a European kingdom, bounded by Austria-Hungary, Servia, Bulgaria, the Black Sea, and Russia; area, 48,307 square miles; pop., including the Dobruja, 5,800,000. It includes the former Danubian principalities of Wallachia and Moldavia and the province of Dobruja on the Black Sea (pop. est. 200,000). The capital is Bucharest; other chief towns are Jassy, Galatz, Braila, and Giurgevo.

The surface is mainly occupied by undulating and well-watered plains of great fertility, gradually sloping upward to the Carpathians on the N. and W. borders, where the summits range from 2,650 to 8,800 feet above sea-level. The entire kingdom is in the basin of the Danube, which has a course of 595 miles in Rumania, forming the boundary with Bulgaria nearly the whole way. The climate is much more extreme than at the same latitude in other parts of Europe; the summer is hot and rainless, the winter sudden and very intense; there is almost no spring, but the autumn is long and pleasant. Rumania is an essentially agricultural and pastoral state, fully 70 per cent. of the inhabitants being directly engaged in husbandry. The chief cereal crops are maize, wheat, barley, rye, and oats; tobacco, hemp, and flax are also

grown; and wine is produced on the hills at the foot of the Carpathians. Cattle, sheep, and horses are reared in large numbers. Excellent timber abounds on the Carpathians. Bears, wolves, wild boars, large and small game, and fish are plentiful. The country is rich in minerals of nearly every description, but salt, petroleum, and lignite are the only minerals worked. Manufactures are still in a rudimentary state.

Trade is fairly active, but it is almost entirely in the hands of foreigners; the internal trade is chiefly carried on by Jews, whose numbers and prosperity are constant sources of anxiety to Rumanian statesmen, and who are in consequence subject to certain disabilities. The chief exports are grain (especially maize), cattle, timber, and fruit; the chief imports, manufactured goods, coal, etc. Germany, Great Britain, and Austria-Hungary appropriate by far the greatest share of the foreign trade, the bulk of which passes through the Black Sea ports.

The Rumanians, who call themselves Romani, claim to be descendants of Roman colonists introduced by Trajan; but the traces of Latin descent are in great part due to a later immigration, about the 12th century, from the Alpine districts. Their language and history both indicate that they are a mixed race with many constituents. Their language, however, must be classed as one of the Romance tongues, though it contains a large admixture of foreign elements. In Rumania there are about 4,500,000 Rumanians, 300,000 Jews, 200,000 gipsies, 50,000 Bulgars, 1,500 Magyars, 20,000 Germans, 20,000 Greeks, and 15,000 Armenians. Three-fourths of the population are peasants, who till 1864 were kept in virtual serfdom by the boiars or nobles. In that year upward of 400,000 peasant families were made proprietors of small holdings averaging 10 acres, at a price to be paid back to the State in 15 years. About 4,500,000 of the people belong to the Greek Church. Energetic efforts are being made to raise education from its present low level. Rumania has two universities (at Bucharest and Jassy), several gymnasia, and a system of free primary schools.

Rumania is a hereditary constitutional monarchy with a Legislature of two bodies. The Senate consists of various dignitaries and officials and 120 elected members; the Chamber of Deputies has 183 members, elected by all citizens paying taxes or possessed of a certain standard of education. The constitution, last revised in 1884, closely resembles that of Belgium. The king is assisted by a ministry of eight members. The army is modeled on the German system, service being compulsory from the age of 21 to 46.

The persecution of Jews in Rumania called forth a protest from the American government, thousands of the unhappy victims having immigrated to this country under conditions that aroused the sympathy and indignation of the American people. It is said that the Rumanian Jews are now re-receiving better treatment.

Rumford, Benjamin Thompson, Count, an American scientist; born in Woburn, Mass., March 26, 1753. Being a Tory in sympathy, he lived in London during the American Revolution. After serving England for a time, he entered the service of the Elector of Bavaria, rose to the position of Minister of War, and was finally created a count of the Holy Roman Empire. He took the title Rumford from the village of that name (now Concord, N. H.), where he had married. He spent the last years of his life at Auteuil, busily engaged in scientific researches — particularly on the nature and effects of heat, studies with which his name is generally associated. As an administrator, military or civil, he showed immense practical capacity in improving the conditions of life for the lower ranks. His best known works include: "Essays: Political, Economical, and Philosophical" (1797–1806); and studies in domestic economy, particularly of cookery. Died in Auteuil near Paris, Aug. 21, 1814.

Ruminants, or **Ruminantia,** a group of herbivorous mammals, belonging to the great order of hoofed or ungulate mammals, included in the Artiodactyle or "even-toed" section of these and comprising the camel, llama, true deer, giraffe, ox, sheep, goat, antelope, and others. The faculty of rumination is not quite peculiar to it.

Ruminants are distinguished from other orders by certain peculiarities of dentition. Most of the ruminants are suitable for human food. They are generally gregarious, and are represented by indigenous species in all parts of the world except Australia.

Rumination, the act of chewing the cud. The food of the ruminants is grass, which requires a longer series of chemical changes to convert a portion of it into blood than does the flesh of other animals eaten by the Carnivora. To produce these changes there is a complex stomach divided into four parts, the rumex or paunch, the reticulum or honeycomb bag, the psalterium or manyplies, and the abomasum or reed. A ruminant does not chew the fodder which it eats, but simply swallows it. When it has had enough it retires to a quiet spot, forces up again to the mouth a portion of the food in its paunch, thoroughly chews it and then swallows it again. Another and another bolus is thus disposed of. Each of these, started from the paunch, is forced next into the honeycomb bag, where it receives its form, and then goes up the gullet. On returning it passes direct from the paunch into the manyplies or third stomach, and thence to the abomasum. Fluids may pass directly into any part of the stomach.

Rump Parliament, in English history, the remnant, or fag-end of the Long Parliament, which was assembled on May 6, 1659, and dissolved October 15 in the same year; so called from the general contumely and derision with which it was treated by the English nation at large.

Rumsey, James, an American inventor; born in Bohemia Manor, Cecil co., Md., about 1743. He invented and patented a boat "calculated to work with greater ease and rapidity against rapid rivers" and one to be propelled by the force of a stream of water pumped out at the stern, etc. The Rumsey Society, of which Benjamin Franklin was a member, was founded in 1788 for the purpose of furthering his schemes, a similar society being founded in England a year later. Rumsey published "A Short Treatise on the Application of Steam" (1788). He died in London, England, Dec. 23, 1792.

Runes. In the Scandinavian lands, Sweden, Denmark, and Norway, thousands of inscriptions have been found written in the ancient alphabet of the heathen Northmen. Similar records are scattered sparsely and sporadically over the regions which were overrun or settled by the Baltic tribes between the 2d century and the 10th. A few are found in Kent, England, which

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was conquered by the Jutes, others in Cumberland, Dumfriesshire, Orkney, and the Isle of Man, which were occupied by the Norwegians, and in Yorkshire, which was settled by the Angles. One or two have been found in the valley of the Danube, which was the earliest halting place of the Goths in their migration S.; and there is reason to believe that a similar alphabet was used by the Visigoths and Burgundians in Spain and France, while it is noteworthy that there is no trace of this writing having been used in Germany or by the Saxons and Franks.

The writing is called Runic, the individual letters are called runestaves, or less correctly runes, and the runic alphabet is called the futhorc, from the first six letters f, u, th, o, r, c. The old Norse word "run" originally meant something "secret" or magical. The oldest extant runic records may date from the 1st century A. D., the latest from the 15th or 16th, the greater number being older than the 11th century, when after the conversion of the Scandinavians the futhorc was superseded by the Latin alphabet.

The origin of the runic writing has been a matter of prolonged controversy. The runes were formerly supposed to have originated out of the Phœnician or the Latin letters, but it is now generally agreed that they must have been derived about the 6th

century B. C., from an early form of the Greek alphabet which was employed by the Milesian traders and colonists of Olbia and other towns on the N. shores of the Black Sea.

Runjeet Singh, called the "Lion of the Punjab," founder of the Sikh kingdom; born in Gugaranwalla, India, Nov. 2, 1780. His father, a Sikh chieftain, died in 1792, and the government fell into the hands of his mother. At the age of 17, however, Runjeet rebelled against his mother's authority, assumed the reins himself, and began a career of ambition. The Shah of Afghanistan granted him possession of Lahore, which had been taken from the Sikhs, and Runjeet soon subdued the small Sikh states to the N. of the Sutlej. He organized his army after the European model with the help of French and English officers, and steadily extended his power, assuming the title of rajah in 1812. He gradually increased his territory until he was ruler of the entire Punjab, and in 1819 had already assumed the title of Maharajah, or king of kings. In 1836 he suffered a heavy defeat from the Afghans, but until his death he retained his power over his 20,000,000 subjects. He died in Lahore, June 27, 1839.

Runyon, Theodore, an American diplomatist; born in Somerville, N. J., Oct. 25, 1822; was graduated at Yale University in 1842. At the outbreak of the Civil War he took command of the 1st Brigade of New Jersey Volunteers, and on April 27, 1861, started for Washington, D. C. On May 6 he reached the national capital, then in a state of great excitement because of an expected invasion by the Confederates with 3,000 men. He promptly took possession of exposed parts of the city and fortified its approaches, especially those at the Long Bridge. When the National army met its first defeat at Bull Run, and was fleeing toward Washington with the Confederates in close pursuit, he closed all approaches, planted cannon, and prevented both the panic-stricken National troops and the Confederates from entering the city. For thus saving the national capital he received the personal thanks of President Lincoln and his cabinet. Soon afterward he resigned from the army and resumed the practice of law. In 1893 he became United States minister to Germany, and in September following was raised to the rank of ambassador. He died in Berlin, Germany, Jan. 27, 1896.

Rupee, a silver coin in use in the British dominions in India, with corresponding ones of much inferior workmanship and variable value in the native states. In 1896 it was worth in United States money, 23.3c. Also a gold coin of India, worth in United States money, 32.4c.

Rupert of Bavaria, Prince, an English military officer; born in Prague, Bohemia, Dec. 17, 1619. After some military experience on the Continent he went to England to assist his uncle, Charles I., and in 1648 he was made admiral of the English royal fleet. After the Restoration he was appointed lord-high-admiral and served with Monk against the Dutch. He became governor of Windsor Castle, privy-councilor, etc. Many of his later years were devoted to scientific study, and he was formerly credited with the invention of mezzotint engraving, which he improved and introduced into England. He invented Prince Rupert's Drops. As one of the founders and the first governor of the Hudson Bay Company his name was given to Rupertsland. He died in London, Nov. 29, 1682, and was buried in Westminster Abbey.

Rupertsland, an extensive but indeterminate region in the interior of Canada, named in honor of Prince Rupert, and transferred to the Hudson Bay Company, of which that prince was one of the founders, by Charles II. in 1670. This region is now included in Manitoba and the Western Territories, but its name still gives the title to the Bishop of Rupertsland, who resides at Winnipeg.

Rupture, the breaking or laceration of the walls or continuity of an organ, especially of a viscus. Also, the popular name for hernia.

Rurik, the founder of the Russian monarchy; flourished in the 9th century; he is generally considered to have been a Varangian of Scandinavian origin, and to have led a successful invasion against the Slavs of Novgorod about 862. He died in 879,

and his family reigned in Russia till the death, in 1598, of Feodor, son of Ivan the Terrible, when it was succeeded by the house of Romanoff. Many Russian families still claim a direct descent from Rurik.

Rusby, Henry Hurd, an American botanist; born in Franklin, N. J., April 26, 1855; was connected with the Smithsonian Institution in 1880–1896; appointed Professor of Botany, Physiology, and Materia Medica in the New York College of Pharmacy in 1888; Professor of Materia Medica at Bellevue Hospital Medical College; Curator of New York Botanical Gardens; revised botanical department of the "United States Pharmacopœia" in 1900–1901. He was a member of a large number of scientific societies and wrote "Essentials of Pharmacognosy"; "Morphology and Histology of Plants"; etc.

Rush, a genus of plants having a glume-like (not colored) perianth, smooth filaments, and a many-seeded, generally three-celled capsule. The species are numerous, mostly natives of wet or marshy places in the colder parts of the world; some are found in tropical regions. The name rush perhaps properly belongs to those species which have no proper leaves; the round stems of which, bearing or not bearing small lateral heads of flowers, are popularly known as rushes. The soft rush is a native of Japan as well as of Great Britain, and is cultivated in Japan for making mats. The common rush and the soft rush are largely used for the bottoms of chairs and for mats, and in ruder times, when carpets were little known, they were much used for covering the floors of rooms. The stems of the true rushes contain a large pith or soft central substance, which is sometimes used for wicks to small candles called rush-lights.

Rush, Benjamin, an American physician; born in Philadelphia, Dec. 24, 1745; he was graduated at Princeton in 1760; studied medicine in Philadelphia, Edinburgh, London, and Paris; and in 1769 was made Professor of Chemistry in the Philadelphia Medical College. Elected a member of the Continental Congress, he signed the Declaration of Independence (1776). In April, 1777, he was appointed surgeon-general, and in July physician-general, of the Continental army. In 1778 he resigned his post in the army because he could not prevent frauds on soldiers in the hospital stores, and returned to his professorship. He was a founder of the Philadelphia dispensary, the first in the United States. He next became Professor of the Theory and Practice of Medicine at Philadelphia, to which chair he added those of the Institutes and Practice of Medicine and Clinical Practice (1791); and of the Practice of Physic (1797); and during the epidemic of 1793 he was as successful as devoted in the treatment of yellow fever. In 1799 Rush was appointed treasurer of the United States Mint, which post he held till his death. He was called "the Sydenham of America" and his medical works brought him honors from several European sovereigns. He wrote "Medical Inquiries and Observations" (5 vols. 1789–1793); "Essays" (1798), and "Diseases of the Mind" (1821). He died in Philadelphia, April 19, 1813.

Rush, Richard, an American statesman; born in Philadelphia, Pa., Aug. 29, 1780; son of the preceding. He was graduated at Princeton College in 1797; and was attorney-general of the United States from 1814 to 1817. In 1817 he was temporary Secretary of State under President Monroe, and was by him appointed minister to England, from whence he was recalled in 1825 by President Adams, who made him Secretary of the Treasury. In 1828 he was candidate for the vice-presidency on the same ticket with President Adams, who was nominated for reëlection, and received the same number of electoral votes. In 1836 President Jackson appointed him commissioner to obtain the Smithsonian legacy, then in the English Court of Chancery, in which he was successful, and returned in 1838 with the entire amount, $515,169. In 1847 he was appointed minister to France. At the close of President Polk's term he asked to be recalled and spent the rest of his life in retirement. He died in Philadelphia, Pa., July 30, 1859. He left "Memoranda of a Residence at the Court of St. James," two volumes; "Washington in Domestic Life";

"Occasional Productions, Political, Diplomatic, etc., while the Author resided as Envoy Extraordinary from the United States, at Paris," published by his sons (1860).

Rushforth, William Henry, an American inventor; born in Leeds, England, July 11, 1844; came to the United States in 1878 and was appointed engineer in a silk factory in Camden, N. J. He made many inventions, the most important being a fire-escape ladder, a series of automatic safety-car signals, and a feed-water heater, which received a silver medal and diploma at the Paris Exposition in 1887. He died in Rutherford, N. J., Aug. 21, 1892.

Rusk, Jeremiah McLain, an American agriculturist; born in Morgan co., O., June 17, 1830; removed to Wisconsin in 1858 and became a farmer. He entered the Union service during the Civil War, as major of a regiment he had raised, the 25th Wisconsin Volunteers; was promoted lieutenant-colonel in 1863; was brevetted colonel and Brigadier-General, 1865. From 1866 to 1870 he was bank-comptroller of Wisconsin, and represented his State from 1871 to 1877 in Congress. In 1882 he was elected governor of Wisconsin and served in that capacity till 1889. He was made secretary of the newly-created Department of Agriculture in 1889, and held this office till 1893. He died in Viroqua, Wis., Nov. 21, 1893.

Ruskin, John, an English author; born in London, Feb. 8, 1819. He studied at Christ Church, Oxford; gained the Newdigate prize in 1839, and graduated in 1842. In 1867 he was appointed Rede lecturer at Cambridge, and in 1870–1872, 1876–1878, 1883-1885 he was Slade Professor of Fine Arts at Oxford, where in 1871 he gave $25,000 for the endowment of a university teacher of drawing. In "Modern Painters" he advocated a complete revolution in the received conventions of art and art criticism. Ruskin was the first art critic to place criticism upon a scientific basis. In 1851 he appeared as a defender of pre-Raphaelitism. About 1860 he began to write as a political economist and social reformer; his chief works in this sphere being "Unto this Last" "Munera Pulveris," and "Fors Clavigera," a periodical series of letters to the working men and laborers of Great Britain. In this connection he founded in 1871, "The Guild of St. George"; founded a linen industry at Keswick, and revived in Langdale, hand loom weaving. His works are entirely too numerous to admit of mention. After 1885 he lived at Brantwood, on Coniston Lake, where he died Jan. 20, 1900.

Russell, Addison Peale, an American journalist and esayist; born in Wilmington, Ohio, Sept. 8, 1826. He wrote: "Half-Tints"; "Library Notes"; "Sub Cœlum," etc.

Russell, Sir Charles Arthur, a British jurist; born in Killowen, Ireland, Nov. 10, 1832; was educated at Trinity College, Dublin. He defended the prisoner in the Maybrick murder case in 1889, and was counsel for the defendant (Parnell) before the Parnell Commission. He was counsel for Great Britain during the Bering Sea Arbitration Tribunal in 1893; became Lord Chief Justice of England; and was created 1st Baron Russell of Killowen in 1894. In 1896 he visited the United States as guest of the American bar association; and in 1899 was British arbitrator in the Venezuelan Boundary Tribunal. He died Aug. 10, 1900.

Russell, Irwin, an American verse-writer; born at Port Gibson, Miss., June 3, 1853. He was among the first to put the negro character to literary account. His dialect and other verse was collected after his death and published as "Poems" (1888). He died in New Orleans, La., Dec. 23, 1879.

Russell, John Earl Russell, K. G., an English statesman, third son of the 6th Duke of Bedford; born in London, Aug. 18, 1792. Educated at Edinburgh University, he entered Parliament in 1813 before attaining his majority. In 1819 he made his first motion in favor of parliamentary reform, of which through life he was the champion. In 1831 he was paymaster-general in Lord Grey's administration, and introduced the first Reform Bill to the House of Commons. From 1841 till 1845 he led the opposition against Peel, with whom, however, he was in sympathy on the Corn Law question; and when Peel re-

signed in 1846 Russell formed a ministry and retained power till February, 1852. In 1859 he became foreign secretary, the Trent affair with the United States occurring while he was in office. In 1861 he was raised to the peerage, and in 1865 succeeded Lord Palmerston in the leadership of the Liberal party; but when his new reform bill was rejected in 1866 he went out of office. He was the author of numerous books and pamphlets, including lives of Thomas Moore, Lord William Russell, and Charles Fox, and "Recollections and Suggestions" (1813–1873), published in 1875. He died May 28, 1878.

Russell, John Scott, a British naval architect, born near Glasgow, Scotland, in 1808. He became a science-lecturer in Edinburgh, and in 1832–1833 temporarily filled the chair of Natural Philosophy at Edinburgh University. Next year he began his important researches into the nature of waves, which led to his discovery of the wave of translation, on which he founded the wave-line system of naval construction introduced into practice in 1835. He was manager of a large shipbuilding yard on the Clyde for several years, and in 1844 established a yard of his own on the Thames. He was one of the earliest advocates of iron-clad men-of-war, and was joint designer of the "Warrior," the first English seagoing armored frigate; but the most important vessel he designed and constructed was the "Great Eastern." One of his chief engineering works was the vast dome of the Vienna Exhibition of 1873, which has a clear span of 360 feet. He was the author of "The Modern System of Naval Architecture," and other writings. He died in Ventnor, June 10, 1882.

Russell, William, Lord Russell, an English statesman, third son of the 5th Earl of Bedford; born Sept. 29, 1639. He entered Parliament immediately after the Restoration, and in 1669 married Rachel, Lady Vaughan. In 1679 he was a member of the new privy council appointed by Charles II. to ingratiate himself with the Whigs. Resigning in 1680, he became conspicuous in the efforts to exclude the king's brother, the Roman Catholic Duke of York, from the succession to the throne, but retired from public life when the Exclusion Bill was rejected. When the Ryehouse Plot was discovered in 1683, Russell was arrested on a charge of high treason, and though nothing was proved against him the law was stretched to secure his conviction. He was sentenced to death, and was beheaded in London, July 21, 1683. An act was passed in 1689 reversing his attainder.

Russell, William Clark, an English novelist; born (of English parentage) in New York city, Feb. 24, 1844. He spent much of his early life at sea, and afterward settled at Ramsgate, England. He published a great number of sea stories and novels.

Russell, William Eustis, an American lawyer; born in Cambridge, Mass., Jan. 6, 1857; was graduated at Harvard University in 1877; was governor of Massachusetts in 1890–1892. He then resumed the practice of law, and became a member of the Board of Indian Commissioners in November, 1894. He was found dead in his fishing tent at Little Pabos, Quebec, Canada, on the morning of July 16, 1896.

Russell, Sir William Howard, an English journalist; born in Lilywater near Dublin, March 28, 1820. He was special correspondent of the London "Times" in the United States during the Civil War, and known as "Bull Run Russell." He published "Extraordinary Men," "The Prince of Wales's Tour," and others. He received various honors from foreign governments and was knighted in 1895 in recognition of his services to journalism.

Russia, one of the most powerful empires of the world, second only in extent to the British empire. It comprehends most of Eastern Europe and all Northern Asia, and is bounded N. by the Arctic Ocean; W. by Sweden, the Gulf of Bothnia and the Baltic, Prussia, Austria, and Rumania; S. by the Black Sea, Turkey in Asia, Persia, Afghanistan, the Chinese empire; E. by the Pacific and Bering Strait. The total area has been officially estimated at 8,660,395 square miles; while the population was 128,894,985.

In the European parts of Russia alone the population increases an-

nually at the rate of nearly 1,500,000. The largest towns are St. Petersburg (1,267,023), Moscow (988,614), Warsaw (638,209), Odessa (405,041), Lodz (315,209), Riga (256,197), Kieff (247,132), Kharkoff (174,846), and Tiflis (159,568). St. Petersburg and Moscow are the capitals of the empire.

European Russia consists almost wholly of immense plains, the Valdai Hills, between St. Petersburg and Moscow, averaging 500 feet and never exceeding 1,200 feet above sea-level, forming the only elevated region of the interior and an important watershed. The mountains include; the Caucasus, running from the Black Sea to the Caspian, reach the height of 18,500 feet; the Urals, stretching from the Caspian to the Arctic Ocean and separating European from Asiatic Russia, have their greatest height below 7,000 feet. Beyond the Urals are the vast Siberian plains.

The whole of the vast empire is watered by numerous rivers, some running a course of thousands of miles. Altogether Russia and Poland have 49,000 miles of navigable rivers. Asiatic Russia has also a number of very large rivers, as the Obi, Yenisei, and Lena in Siberia, and the Amur toward the Chinese frontier. This complete river system is of incalculable value to Russia, as by its means internal communication is carried on. Canals connect the navigable rivers, so as to form continuous waterways; there being 500 miles of canals and 717 of canalized rivers.

As may be expected from its vastness this empire offers soils and climates of almost every variety. Extreme cold in winter and extreme heat in summer, are, however, a general characteristic of Russian climates. As regards soil large sections of Russia are sandy, barren wastes and vast morasses. The most productive portion is that between the Baltic and the Gulf of Finland, and the Volga, on the N. and E.; Prussia, Austria, etc., on the W.; and the Black Sea on the S. It has, generally speaking, a soft black mold of great depth, mostly on a sandy bottom, easily wrought, and very fertile. The more S. portion of Siberia, as far E. as the river Lena, has, for the most part, a fertile soil, and produces, notwithstanding the severity of the climate, nearly all kinds of grain.

Boundless forests exist, the area of the forest land in Europe being 42 per cent. of the total area. The fir, larch, alder, and birch predominate. Most of the forest land is now under government control, and waste is prevented. Agriculture remains the chief pursuit of the bulk of the population. For some years it has, however, remained stationary, while manufacturing industries are steadily going ahead. The chief crops are rye, wheat, barley, oats, hemp, flax, and tobacco. Vine and beet culture is rapidly increasing, and the breeding of horses and cattle is also extensively carried on.

Russia is rich in minerals. The precious metals are chiefly obtained in the Ural and Altai regions. The output for 1899 was, gold, 1,072,333 ounces; platinum, 12,339 pounds; silver, 134,887 ounces. In the Ural, iron beds are also rich and numerous, exceeding all others in productiveness. Copper is most abundant in the government of Perm; lead in the Ural and some parts of Poland; saltpeter in Astrakhan. Of the coal mines those of the Don basin are the principal at present, those of Kielce ranking second; the mines around Moscow come next. About 60,000 tons of manganese ore are annually extracted in the Ural and the Caucasus. The petroleum wells of Baku on the Caspian now send their products all over Europe.

Prior to the accession of Peter the Great, Russia had no manufactures; he started them, and under the more or less fostering care of his successors and Russia's protective policy they have steadily grown. The latest statistics give a total of about 1,400,000 persons as being employed in the various manufacturing industries. Two-fifths of the entire production comes from the two capitals, St. Petersburg and Moscow. The various manufactures rank approximately as follows: spirits, sugar, cottons and yarns, flour, tobacco, foundry products, flax, yarn, and linen, leather, woolen cloth and yarn, iron, machinery, beer, soap, timber, paper, oil, glass, chemicals, agricultural implements.

The bulk of Russia's external trade is carried on through the European

frontier and the Baltic and Black Sea ports. The chief exports are: grain (about one-half of entire exports), flax, linseed and other oleaginous seeds, timber, hemp, wool, butter and eggs, spirits, bristles, and furs, in the order indicated. The chief imports are cotton, wool, tea, machinery, coal and coke, cotton yarn, metal goods, wine, olive oil, raw silk, herrings, textile goods, fruit, coffee, tobacco. The import trade is heaviest with Germany, Great Britain, France, Austria-Hungary, and Belgium, in the order named. In the export trade Great Britain takes the lead, Holland, France, and Germany following.

Russia is an absolute hereditary monarchy, the emperor (czar or tsar) being the supreme ruler and legislator, and the final tribunal in all matters political or ecclesiastical. His title is Emperor and Autocrat of all the Russias, Czar of Poland, and Grand-prince of Finland. The administration is divided into 12 departments, with a minister at the head of each nominated by the emperor. Holding a distinct position from these are four great boards or councils. These are the State council, the council of ministers, the senate of the empire, and the Holy Synod. Russia is heavily in debt, chiefly abroad, Germany in particular holding large amounts of Russian stocks. Total liabilities of the empire, Jan. 1, 1899, $3,575,000,000. The revenue for 1900 was about $796,872,840; expenditures, about $782,220,840.

The established religion of Russia is the Eastern or Greek Church, and one of the fundamental laws of the State is that the emperor must belong to that Church, and none of the imperial family may marry a wife belonging to another religion without the express sanction of the emperor. Dissenters from the Orthodox Church are known as "raskolniki," and are nominally tolerated, but really subjected to serious, and often most cruel maltreatment. Roman Catholics are subject to certain restrictions, and persecution and massacre have driven multitudes of Jews into exile. Education in spite of many obstacles, is progressing, but Russia is still nearly a century behind most European nations. Only 23 per cent. of the aggregate population receive education in schools. A law was passed in 1888 to spread technical education; there are 9 leading universities, a teaching staff of 1,039, and 14,542 students.

Russia's real greatness may be said to date from the accession of Peter the Great in 1696, who first secured for the country the attention of the more civilized nations of Europe. From then on the growth of the empire was continuous.

Russian Expansion, in the 19th Century. At the opening of the 19th century, the Russian empire, with a territory of some seven and a half millions of square miles, was by far the largest state in the world. Its population, however, of, say 40,000,000, though greater than that of France or Germany, was smaller than that of the part of India already under British control, and insignificant compared with the teeming swarms in China. The huge, thinly settled dominions of which Alexander I. became ruler in March, 1801, extended over three continents; and except where they reached the seas which for the most part closed them in rather than served as outlets, and except where they were cut off from China by the range of the Tien-Shan mountains, they lacked almost everywhere natural geograhical boundaries. Since then the growth of Russia has been of a twofold kind, namely, the filling up of vacant spaces within her own borders and an expansion along obvious lines; for, over and above the ambition of individuals and the accidents of historical development, we can perceive the great natural forces which have determined her march toward the open sea and toward immediate contact with the firm limits of the other chief powers of the civilized world. On the other hand, it is noteworthy that certain impulses which have often built up empires have in her case been conspicuously absent. Even in Russia the days of crusades are nearly over, while those of commercial expansion are only just beginning. Nationalism, too, which has made modern Germany and Italy, though it led the government of the czar in the 19th century to attempt with more or less success the Russification of his subject peoples, did not influence changes of boundaries. The partition of Poland had already brought under one rule all the

branches of the nationality (Great, Little, and White Russians) except the three millions of Little Russians once Polish subjects, now Austrian, and in religious communication under their own rites, with Rome, not Moscow. United Russia has with this exception, long been a fact, and the shallow, unpractical doctrines of Panslavism have brought no lost sheep into the national fold.

For the sake of clearness, we shall trace the changes first on one and then on another of the frontiers of the empire, rather than follow strictly chronological order, noticing at the outset that almost all the gain since 1815 has been made in Asia, while the European acquisitions belong to the earliest years of the century, and Russian America has ceased to exist. We thus get the keynote to the policy that has been followed and the ground of its success. Progress has been made along the lines of least resistance and most profit. There has been comparatively little desire to annex thickly settled regions inhabited by highly civilized peoples; and at the other extreme the region we now call Alaska was abandoned as too remote to be worth the effort of retaining. Russian territory is hence not only larger but more compact than it was a century ago.

Beginning with the European and N. W. frontier, the first great acquisition of the czars in the 19th century was the province of Finland. Finland had been for 600 years a part of Sweden; the upper classes and the populations of the towns spoke Swedish, and the whole people had accepted Lutheran Protestantism. In spite also of some discontent, chiefly among the aristocracy, the land as a whole was perfectly loyal to the government at Stockholm. What made a Russian conquest of Finland almost inevitable sooner or later was the position of St. Petersburg. Peter the Great founded his capital on his enemy's soil, and even the victorious treaties concluded by him and by his daughter Elizabeth, still left the town within a few miles of the frontier. How great the danger might be was shown in 1789 by the sudden attack of Gustavus III. of Sweden, at a moment when the Russian armies were in the far South operating against the Turks. Probably nothing but the mistakes of the Swedish king and the disloyalty of his officers saved Russia on this occasion from the humiliation of seeing her capital fall into the hands of the enemy. The peril still existed, for, however weak Sweden was herself, her territory might be used as a base of operations by some stronger power. It is not remarkable, then, that Alexander profited by the first opportunity of despoiling his neighbor, showing, indeed, little scrupulousness as to his methods. In 1807 his coalition against France had failed, for Austria had submitted to Napoleon after the battle of Austerlitz, Jena had made the conqueror master of Prussia, and Friedland exposed the czar's own lands to invasion and to the dangers of a Polish revolt. He accordingly reversed his policy, and after the interview on the raft in the Niemen and the peace of Tilsit (June 7, 1807), the two sovereigns, now sworn friends, agreed to combine against England and to divide the continent of Europe, as suited them. In return for a free hand in the West, the French emperor abandoned Sweden and Turkey to the czar. If in this transaction we can hardly blame Napoleon for showing little tenderness for his fanatical opponent, Gustavus IV., who had declared him to be the beast of the Apocalypse, Alexander might have been expected to have some hesitation in attacking a recent ally who had given him no real provocation. Even though the blindly foolish conduct of Gustavus did furnish the pretext wanted, the act was one of cold-blooded and successful rapacity. Finland, in spite of the bravery of her troops, was badly defended, owing to the incompetence of the king and some of his officers. By the treaty of Frederikshamm (Sept. 17, 1809) Sweden surrendered the province, and three years later, Charles XIV. (the former French Marshal Bernadotte) actually entered into an alliance with Russia, accepting definitely what had happened, in return for the prospect of getting Norway.

Thus Finland was added with little difficulty to the territories of the czar, but the circumstances connected with the acquisition are a burning question today. Alexander I. had been brought up in the cosmopolitan ideas of the 18th century, so different from the rabid nationalism of the present

time. He was as anxious as anyone to enlarge his possessions, but the idea that they must have an exclusive Russian character was not one that would appeal to a prince and court whose language in everyday life was French. Then, too, in this the earlier period of his reign, he was full of liberal dreams. His sentimental nature saw no incongruity in his being at the same time autocrat of all the Russias and constitutional sovereign of peoples used to a freer form of government. As a result, he treated Finland with startling liberality; he made it a grand-duchy, almost independent of Russia, except in foreign affairs; he gave it a constitution based on the former one of Sweden, and he even added to the province that part of its lands that had been conquered and taken away by Peter the Great and Elizabeth. Under this regime Finland has greatly prospered; unfortunately, however, the prosperity has not unnaturally excited the anger and envy of Russians. They point out that the grand-duchy has had all the advantages of its connection with a mighty empire without bearing its proportionate share of the burdens, and they declare that what a czar had given a czar can take away, and that the promises of Alexander I. cannot be regarded as binding on his successors when they entail an obvious injustice to the rest of his peoples. More than once has the autonomy of Finland been menaced, and at the present time when the reaction against Liberalism is still dominant, and when Russia, like many other countries, is under the fierce influence of a national spirit that would like to impose one language, one law, and even one religion on all the peoples of the empire, the privileges of the grand-duchy are more than menaced. Already the separate tariffs, stamps, and coinage are gone; the army is to be raised to the same proportionate strength as that of Russia, and practically incorporated with it; affairs common to all parts of the emperor's domains are to be settled in St. Petersburg alone; Russian will be the official language, and more is yet to come. The Finns have protested and entreated, but as they are far too weak to be able to offer forcible resistance, their ultimate fate would seem to be only a question of time.

The same spirit which influenced Alexander as regards Finland dictated his conduct toward his Polish provinces. Though of the three powers that had partitioned Poland, Russia had obtained the largest share, she had acquired comparatively few subjects of strictly Polish blood. The great majority of the genuine Poles (with their two capitals, Warsaw and Cracow) had fallen to Prussia and Austria, while the Empress Catherine had taken territories chiefly inhabited by Lithuanians and Little and White Russians, which she might hope in time to assimilate with the rest of her empire. Alexander I. early showed an eagerness for all the Polish territory that he could get. At the peace of Tilsit it was arranged that he should obtain the province of Bialystok, at the expense of his faithful ally the Prussian king; at the peace of Vienna (1809) he was given the district of Tarnopol in Galicia in return for his pretense of assisting Napoleon in the war against Austria; in 1814 and 1815 at the Congress of Vienna he pushed to the verge of a general European conflict his claim to the whole grand-duchy of Warsaw, and yielded only to the combined opposition of Austria, England, and France, which forced him to content himself without Galicia and Posen. But Alexander's policy in all this was far from being a national one; on the contrary, under the influence of his friend Prince Czartoryski, he re-created the constitutional kingdom of Poland, the old rival and at one time the dangerous enemy of Russia; and he even would have given to it the disputed Lithuanian territories but for the unanimous opposition of his Muscovite subjects. However well meant, it is very questionable whether the experiment tried in 1815 was not doomed to failure from the outset. Since that time the frontiers of the czar's dominions in this region have remained unaltered; but the kingdom of Poland disappeared after the insurrection of 1830, and its last national privileges were taken away after that of 1863.

When we turn to the South we find that the war between Russia and Turkey, which ended with the peace of Bucharest in 1812, gave to the czar

the territory of Bessarabia between the Dniester and the Pruth. Alexander's proverbial good fortune served him well here, as, in order to use all his forces against Napoleon's great invasion he needed peace, in spite of his victories, more than did the Turks. Seventeen years later, by the peace of Adrianople in 1829, Russia acquired the islands of the Danube delta, which she lost again in consequence of the Crimean War and has never got back, though the part of Bessarabia that she was deprived of after her defeat was returned to her by the treaty of Berlin. Her frontier is thus practically the same as it was after 1812, though she had a different neighbor. Instead of the Ottoman empire, which she now no longer touches in Europe, she is contiguous to the independent kingdom of Rumania.

In the mountainous regions of the Caucasus, the spread of Russian rule has been marked by an almost uninterrupted series of wars and expeditions, during the first three-quarters of the 19th century. Already, in 1782, Heraclius, Prince of the Christian State of Georgia, had put himself under the protection of Catharine II. This led to war with the Shah of Persia, who claimed the overlordship of the country. Paul I. withdrew the Russian troops that had been sent, but in 1801 the last Prince of Georgia abdicated in favor of the czar, and Alexander I. promptly dispatched fresh forces to the rescue. In 1803 and 1804 the Georgian dependencies of Mingrelia and Imeritia were taken over, and hostilities with Persia continued till the treaty of Gulistan in 1813, by which Russia obtained not only Georgia and its appurtenances, but also the coast of the Caspian at the E. end of the Caucasus, including the famous pass of the Iron Gates. The war of 1826–1828 brought a fresh accession of Persian territory in the shape of the provinces of Erivan and Nakhchivan, with a frontier extending to Mt. Ararat. The fierce mountaineers of the main chain, however, especially the Circassians in the W. and the Lesghians and Tchesmeans in the E., long defied the efforts of the great armies employed against them. For many years the Russian government occupied only the coast of the Kuban on the Black Sea to cut off the Circassians from foreign aid, and it was not till 1864 that they were finally subdued, and the chief tribes N. of the mountains were given the choice of moving into other less inaccessible lands or of emigrating into Turkey. In the E., in Daghestan, Kazi Mollah and his more famous successor Shamyl after 1824 kept up a desperate resistance repeatedly escaping or defeating the expeditions sent against them, till the capture of Gunib and of Shamyl himself in 1859. From Turkey, Russia acquired by the treaty of Adrianople the regions about the towns of Poti and Achalzig; by the treaty of Berlin, the seaport of Batum and the territory and fortress of Kars, though owing to the opposition of England she was obliged to retrocede the city of Bayezid, near Mt. Ararat, which had been surrendered to her at San Stefano. The province of Transcaucasia now has an area of 94,000 square miles and a population of some eight and a half millions, unequaled perhaps in the world for variety of nationality and language.

On the other side of the Caspian, in the huge but thinly inhabited regions of central Asia, we find the greatest extension of Russia in the last century, and particularly in the latter half; for previous to the reign of Alexander II. she had done little but occupy a few bases of operations and send Perovski's unfortunate expedition against Khiva in 1839 and 1840. Even leaving out of consideration any ambition of the statesmen of St. Petersburg to push the borders of the empire toward the open sea, or to occupy such a position on the flank of India as would force Great Britain to think twice before making trouble in other parts of the world, the conquest of Turkestan (as it used to be called) was inevitable, sooner or later. No uncivilized modern State submits in the long run to the neighborhood of a jumble of barbarous principalities and tribes, unable and often unwilling to maintain order within their own boundaries or to prevent depredations beyond them. The Muscovite campaigns in central Asia may have been due to political schemes of the time or to the ambition of individuals, but at bottom they were brought about by perfectly natural causes, like the spread of British rule

in India after it had once obtained a real foothold. It is unnecessary here to do more than recapitulate the chief steps.

By 1864 Tchernaiev had conquered most of the region to the E. of the Syr-Daria, or Jaxartes; in the following year he took Tashkend by storm; in 1868 Samarcand was annexed and the defeated Emir of Bokhara compelled to submit; in 1873 Kaufmann made his successful expedition against Khiva, which was reduced to a vassal state and the desert regions to the E. and W. of it were added to the empire; in 1876 Khokand, having revolted against its khan, was subdued and annexed. Up to this point Russian progress had been from the N., and much impeded by the huge desert stretches the troops had been obliged to traverse. Now, immediately after the last war with Turkey which so nearly led to a conflict with England, we find the Russians starting from a new base of operations, their posts at the S. E. of the Caspian, and pushing with more conscious purpose along a line just N. of the Persian frontier, maintaining their communications and greatly strengthening their position by building the Transcaspian railway behind them. In 1881 Skobelev took Geok Tepe by storm; two years later Merv surrendered without resistance; in 1885 Komarov defeated the Afghans at the Kooshk river; and the frontier marked out by the Anglo-Indian Delimitation Commission in the following year gave Russia the district of Penjdeh. Farther to the E., in the high mountains of the Pamir plateau, the meeting place of empires, a definite boundary which now brings the two mighty rivals into immediate, if almost inaccessible contact, was established in 1895. In Persia the conflict of influence between them has lasted for the greater part of the century, and still continues. At present, a treaty made recently seems to put the government at Teheran financially in the hands of that of St. Petersburg, but as yet we cannot call Persia a part of the dominions of Nicholas II. any more than we can say Afghanistan belongs to King Edward. On the other hand, Khiva and Bukhara (most maps to the contrary notwithstanding) are as much a portion of the Russian empire as any native Indian state is of the British.

To the N. E. of central Asia, Kooldja, in the valley of the upper waters of the Ili river, had fallen into a state of anarchy at the time of the great Dungan rebellion against China. Profiting by the confusion, as the district was on their side of the mountains and seemed only a natural geographical continuation of their own province of Semiretchinsk, the Russians occupied it and held it for 10 years. The Chinese, however, having reëstablished their authority elsewhere, now demanded back Kooldja, to obtain which they appeared ready to go to war if necessary. As such a war would have been most unwelcome to the government at St. Petersburg it yielded after some negotiation, and gave up the greater part of the territory, though retaining the W. portion.

Turning now to Siberia, we find that almost the whole of it has belonged to Russia since much earlier than the 19th century. Its recent history, therefore, has chiefly been one of internal development and of filling up with an immigrant population, for long very slowly, but with an ever-increasing rush in the last dozen years. The Trans-Siberian railway, whose traffic is already far beyond the estimates will greatly facilitate the development of the fresh sources of wealth of many kinds that are being discovered; and the annual immigration, in spite of a tendency on the part of the government to restrict it, has risen to something like two hundred thousand people. What Siberia needed most was an outlet to the E., for the treaty of Nerchinsk, in 1689, had cut off Russia for nearly two centuries from the lower valley of the Amur and any seacoast with a temperate climate. One man, Muraviev (appointed Governor of East Siberia in 1847), acting on his own initiative and in spite of coldness and of some hostility on the part of his superiors, made a marvelous change in the situation. Trusting to the decay of Chinese strength and authority in these regions, he descended the Amur river and established on its banks a series of posts, including the factory of Nikolaievsk at the very mouth (1851); and finally, profiting by the Taiping rebellion, the troubles of China with England and France, and the general

confusion and imbecility at Peking, he signed after six days' negotiation in 1858 the treaty of Aigun, which, supplemented by that of Peking two years later, gave Russia not only the whole N. bank of the Amur, but also the maritime province between its S. affluent, the Ussuri, and the sea, with the site of the present city of Vladivostok. The importance of these acquisitions can hardly be overestimated. Russia not only gained a rich territory of extreme value to the rest of Siberia, but her relations with the Chinese empire were revolutionized, for she now has a position of vantage no other power can hope to equal, as recent events have amply demonstrated.

We may note as a small later gain the part of the island of Saghalin held by the Japanese and ceded by them in 1875 in return for the Kurile Islands, but we need not include in our account here the interference of Russia in the Chinese-Japanese War, her designs on Korea, her lease of Port Arthur and Talien-Wan, and her acquisition of partially sovereign rights in Manchuria. In none of these cases has there been definite, absolute cession of territory, though it practically amounts to this for Liao-tung peninsula; still, in view of what is happening in China, we may treat these last events as mere preliminaries to a chapter of history belonging to the 20th century. It is worth noting, however, that in her present attitude toward China, Russia seems to be partly actuated by the modern motives of commercialism, which have hitherto played little role in her history, owing to her very recent industrial development. In concluding our survey of the changes of boundaries of the empire of the czar, we must not forget that, on the American continent, not only did the attempt to found settlements near the Columbia river in 1809 and in California in 1812 lead to nothing, but in 1867 Russia sold all her American possessions, amounting to over half a million square miles, to the United States for the small sum of $7,200,000.

When we try to sum up our impressions of a century of Russian expansion, the first glance at the figures should show us the error of the common Anglo-Saxon notion that we are dealing with a particularly rapacious power growing faster than any other. Counting up gains and losses, we find that the increase of Russian territory during the century has been far less than that of Great Britain, or of the United States, or even of France, and is hardly larger than the colonies acquired by Germany in the last 15 years. Even as lately as a generation ago, the Russian empire was double the size of the British; it is now the smaller of the two by over 30 per cent. Its great accession of strength has come chiefly from the natural growth of its population and the development of its resources. If it were suddenly reduced today to its frontiers of the year 1800, it would still be the second largest State in the world, with a population of over a hundred millions of inhabitants. What makes the power of Russia appear so imposing, and her advance so irresistible, is not so much the size of her armies and the skill and ambition of her statesmen, whose reputation has often been exaggerated; it is rather the compactness of her enormous mass which gives her the same sort of practical invulnerability possessed by the United States. Whereas we can without much difficulty conceive of a war that would deprive England or France or Germany of all their colonial possessions, and even mutilate their territories so that they would forfeit indefinitely the position of great world powers which they now hold, such a disaster is almost inconceivable of Russia. She might be beaten by a coalition, and exhausted, as she was by the Crimean War; she might lose Finland, Poland, her territories S. of the Caucasus; none of these would affect her vitally, and even the taking away of her coast on the Pacific might check, but could not prevent the development of Siberia, and would be difficult to maintain in the end. However the extremities might suffer the great national bulk of the empire would remain little harmed and would need but a few years' rest to begin to expand again along natural lines. No wonder that the progress of Russia has been likened to that of a glacier. This progress, like that of every conquering empire has been marked by much that is unjustifiable, but though perhaps there has been more Eastern crookedness in her methods than in those of

some other countries, on the score of rapacity or the desire to extend the benefits of civilization,—call it what you will,—no one of the great nations of the world can afford to throw stones at the others. The Anglo-Saxon finds it difficult to sympathize with Muscovite ideals of government, and is often loud in his denunciation of the practices of the Russians; but he must admit that with the possible exception of Finland and Poland, all the regions which have passed under their rule in the 19th century have found it, whatever its faults, unquestionably superior to anything they had before known. Today Russia is one of the leading powers of the world, and as far as human foresight extends she seems destined to remain so.

A. C. Coolidge.

Russo-Japanese Dispute. About the close of 1903 the long-pending differences between Russia and Japan over Manchuria and Korea reached an acute stage, and it was apprehended that war would ultimately result. Manchuria is a valuable province of Northern China, 363,610 square miles in extent. A strong power occupying Manchuria has Peking within military grasp. At the time of the Boxer uprising in 1900 Russia took military possession of Manchuria, which with the province of Kwantung, including Port Arthur and Talienwan, with adjacent territories, has been formed into the department of the Amur with Vice-Admiral Alexieff in supreme command. Russia has built two important railways through Manchuria, has founded new cities and towns, and had in 1903, 200,000 troops in the province, with nearly all the best vessels of her fleet in adjoining waters. Japan demanded that the Russians evacuate Manchuria, as agreed upon by convention of April 8, 1902, the final date for evacuation having been extended afterward to October, 1903. Russia showed no sign of leaving the province, and Japan made ready for war, although stating diplomatically that there was no likelihood of war. The Japanese had a much more effective fleet than the Russians, but were much inferior in military strength, the grand total of the Japanese forces being 632,000 men, while Russia could muster 4,600,000.

Ruth, a short book now placed in the Hebrew Bible between the Song of Solomon and the Lamentations. The Book of Ruth is a beautiful idyllic composition. It was penned not earlier than the time of David, and probably much later, for there had been time for customs existent in the days of Boaz and Ruth to change. The narrative is in pure Hebrew, but there are Aramæanisms in the dialogues. Its canonicity has never been doubted.

Ruthenians, Russinians, or **Russniaks,** numerous Slavonic tribes inhabiting Eastern Galicia, Bukowina, and Northeastern Hungary, closely allied to the inhabitants of Podolia and Volhynia.

Ruthenium, a tetrad metallic element discovered by Osann in 1828, in the platinum ores from the Ural, and first isolated by Claus in 1846. With the exception of osmium it is the most refractory of all metals, but can be fused in the hottest part of the oxyhydrogen blow pipe.

Rutherfurd, Lewis Morris, an American astronomer; born in Morrisania, N. Y., Nov. 25, 1816; was graduated at Williams College in 1834. He made a number of instruments for his observatory, among which were an object glass which proved a great success, a micrometer for the measurements of astronomical photographs, a ruling engine with which he produced interference gratings on glass and speculum metal. He retired from active astronomical work in 1883, and presented his instruments to Columbia College. He was one of the original members of the National Academy of Science. He died in Tranquillity, N. J., May 30, 1892.

Rutledge, Edward, an American statesman; born in Charleston, S. C., Nov. 23, 1749; was a member of the Continental Congress in 1774–1777; took a conspicuous part in the discussions preceding the adoption of the Declaration of Independence, of which he was a signer; was on a commission with John Adams and Benjamin Franklin which met Lord Howe, Sept. 11, 1776, on Staten Island, but refused to enter into any treaty with him except on the basis of American independence. He was lieutenant-colonel of the Charleston Artillery

which aided in expelling the British from the island of Port Royal in 1779; and was captured in 1780 and imprisoned for a year in St. Augustine. At the conclusion of hostilities, he resumed the practice of law in Charleston; and was elected governor of South Carolina in 1798. He died in Charleston, S. C., Jan. 23, 1800.

Rutledge, John, an American jurist, brother of Edward; born in Charleston, S. C., in 1739. He was a member of the South Carolina convention of 1774 that decided to take part in the Continental Congress, and a delegate to the latter body in 1775; chairman of the committee that framed the South Carolina constitution in 1776, and elected that year president of the new State government and Commander-in-Chief of the militia. In 1778 he was again elected governor of South Carolina. In 1780, when Charleston was captured by the British, he retired to North Carolina, joining Greene's army; but resumed the governorship at the close of the war. In 1782 he was elected to Congress, and reëlected in 1783. He was a member of the convention that framed the Constitution of the United States. In July, 1795, he was appointed by Washington Chief Justice of the Supreme Court and served the August term of that year; but his mental faculties failing, he was not confirmed by the Senate in December. He died in Charleston, South Carolina, July 23, 1800.

Ryan, Abram Joseph, an American verse-writer; born in Norfolk, Va., Aug. 15, 1839. It was while chaplain in the Confederate army that he wrote his well known poem "The Conquered Banner," composed shortly after Lee's surrender. He died in Louisville, Ky., April 22, 1886.

Ryan, Carroll, a Canadian author; born in Toronto, Ont., Feb. 3, 1839. On leaving the army, where he served during the Crimean War, he devoted himself to journalism and literature. He edited and published a number of Canadian newspapers, contributed articles and poems to magazines, and lectured on the Liberal side. His published works include: "Oscar, and Other Poems," "The Canadian Northwest and the Canadian Pacific Railway."

Ryan, Patrick John, an American Roman Catholic prelate; born in Thurles, Ireland, Feb. 20, 1831. He was ordained deacon in 1853, completing his studies in St. Louis, Mo., and raised to the priesthood in 1854. In 1872 was elected coadjutor archbishop of St. Louis. He was promoted archbishop in 1883 and in 1884 transferred to the see of Philadelphia.

Rye, a grain which is cultivated extensively in America and largely also in Germany, Scandinavia, Russia, Holland, and other countries; cultivated to a small extent in England. It grows on poor, light soils, unsuitable for wheat. The value of rye is about two-thirds that of wheat; its nutritious properties are to those of wheat as about 64 to 71. In the year 1900 the United States produced 23,995,927 bushels of rye, valued at $12,295,417.

Rye House Plot, in English history a conspiracy, planned in 1683, the immediate object of which was to assassinate Charles II. and his brother, the Duke of York (afterward James II.), as they returned from the Newmarket races, but it was frustrated by the king and his brother happening to return from Newmarket earlier than was expected. The detection of the plot led to the arrest, on a charge of high treason, of Lords William Russell, Essex, and Algernon Sidney, who were in no way connected with it. Essex put an end to his own life in the Tower, while Russell and Sidney were beheaded, as also Lieutenant-Colonel Walcot, one of the real contrivers of the plot.

Rymer, or **Rhymer, Thomas, the** (Thomas Lermont of Erceldoune), a Scotch poet of the 13th century, who occupies an important place in the mythical and legendary literature of Scotland. His name is associated with fragments of rhymed or alliterative verse, many of which have been collected and published as "The Prophecies"; and "Sir Tristem: A Metrical Romance Edited by Sir Walter Scott from the Auchinleck MSS."

Ryotwar, a system of land tenure in India, approaching the single-tax idea, where the land-cultivators pay directly to the government for the use of the land.

S, the 19th letter and the 15th consonant of the English alphabet. It represents a hissing sound and is classed as a sibilant.

Saba, a small West Indian island belonging to Holland and governed as a dependency of Curacao. It consists of a single volcano cone furrowed by deep, wooded, and fertile valleys. Area 5 square miles; pop. 2,500.

Sabæans, the name of the ancient inhabitants of Yemen in Southern Arabia.

Sabbatai Zevi, Sabbathais Zevi, or **Sabtai Zefi,** a false messiah, the founder of a widespread sect of semi-Christians and semi-Jews throughout Europe, Asia, and Africa; born in Smyrna, Turkey, in 1641. He led thousands of followers, mainly in Smyrna, Salonica, Alexandria and Jerusalem, to believe in him as the Messiah. In 1664 about 80,000 people belonged to the new empire. But later he was apprehended at Smyrna and terrified into something like a recantation of his mission. Finally the grand vizier was persuaded to imprison Sabbatai once more, and to send him to Albania or Servia, where he died in prison — acording to some, in consequence of poison, while according to others he was executed in 1677, 10 years after his conversion.

Sabbatarian, in the 16th century, a sect who considered that the Christian Sabbath should be kept on the seventh day (Saturday). In modern times the word means one who holds that the Lord's day is to be observed among the Christians in exactly the same manner as the Jews were enjoined to keep the Sabbath; one who holds rigid views of Sabbath observance.

Sabbath, a sacred day of rest (the word being derived from shabath, Hebrew, to rest), the institution of which is first mentioned in Gen. ii: 2-3.

The prevailing interpretation is that the Sabbath was instituted at the creation, for mankind in general, and that septenary institutions may therefore be expected in all nations. Prior to the giving of the law from Mount Sinai, the Sabbath is mentioned in connection with the descent of manna. The keeping holy of the Sabbath is enjoined in the fourth commandment in Exodus, because of God's having rested after the creation; in Deuteronomy because of the deliverance of the Hebrew bondsmen from Egypt.

Always in the Gospels, and as a rule in the other books, Sabbath means the seventh day of the week. By this time its observance had become very rigid and punctilious, and Jesus Himself was constantly denounced by the Pharisees and others as a Sabbath-breaker.

In the Middle Ages Sabbath meant only Saturday. According to the elder Disraeli, it was first used in England for Sunday in 1554.

Sabellianism, in Church history, the name given to any form of doctrine which denies a real distinction between the Persons of the Trinity; the same as Patripassianism. Also the doctrine of the adherents of Sabellius (an African presbyter of the 3rd century), if not of Sabellius himself. It resolved the doctrine of the Trinity into three manifestations of God to man, and taught that the same Person was the Holy Ghost when manifesting himself to the Christian Church, and, by parity of reasoning, the Son, when he appeared in Christ.

Saber, or **Sabre,** a sword having a curved blade, specially adapted for cutting. That for heavy cavalry has a slightly curved, heavy blade. The light cavalry saber has a lighter blade, somewhat more curved. The horse-artillery saber is still shorter, lighter, and more curved, and has but one branch to the guard.

Sabianism, Sabæanism, or **Tsabaism,** a faith which recognized the unity of God, but worshiped angels or intelligences supposed to reside in the stars and guide their motions, whence the lapse, at least on the part of the common people, to the worship of the stars became easy. They had sacrifices and sacred days, and believed in a future state of retribution. They were once numerous in Arabia, Syria, and Mesopotamia, and their sacred books were in Syriac. The early Mohammedans did not rank them with polytheists.

Sabicu, or **Savicu,** a leguminous tree, native of Cuba. It furnishes an exceedingly heavy and hard wood, with a texture as smooth, close, and firm as ivory almost, and of a rich, warm, red color. It is much employed for shipbuilding and cabinet making.

Sabine, Sir Edward, a British physicist; born in Dublin, Ireland, Oct. 14, 1788. He obtained a commission in the artillery in his 16th year, and accompanied Ross and Parry as astronomer in the expeditions of 1819–1820 in search of a Northwest passage. Between 1821 and 1827 he undertook a series of voyages to places between the equator and the North Pole, making at each point pendulum and magnetic experiments of great value. Elected a Fellow of the Royal Society in 1818, he was from 1861 to 1879 its president. In 1856 he was promoted Major-General, in 1869 he was created K. C. B., retiring as general in 1874; and in 1875 he was elected a corresponding member of the French Academy. His scientific reputation rests chiefly on his labors in terrestrial magnetism, his various memoirs in the "Philosophical Transactions" and "Reports" to the British Association being to this day invaluable collections of magnetic facts. By his personal influence he did more than any other single man in inducing the government to establish magnetic observatories in different parts of the world, and in initiating the valuable magnetic work now carried out by the admiralty. He died in Richmond, England, June 26, 1883.

Sabine, Lorenzo, an American historian; born in New Lisbon, N. H., Feb. 28, 1803; settled in Massachusetts in 1849, and was made a secret agent of the United States Treasury Department in connection with United States commerce as affected by the Ashburton Treaty; and was a Whig member of Congress in 1852–1853. His publications include "The American Loyalists, or Biographical Sketches of Adherents to the British Crown in the War of the Revolution"; "Reports on the Principal Fisheries of the American Seas." Died in Boston, Mass., April 14, 1877.

Sabines, an ancient people of Italy, supposed to have been named from "Sabus," one of their deities. Little is known of their history. They were at war with the Romans at a very early period. A contest broke out between them 504 B. C., and a body of the Sabines migrated to Rome, where they were welcomed, and founded the powerful family and tribe of Claudii. The Sabines carried their ravages to the very gates of Rome, 469 B. C. On their defeat by Marcus Horatius, 449 B. C., their camp was found full of plunder obtained in the Roman territories. They were again at war with the Romans, 290 B. C., and having been vanquished, many of them were sold as slaves. The remaining citizens were admitted to the Roman franchise.

THE SABLE.

Sable, a digitigrade carnivorous mammal, nearly allied to the common

marten and pine marten, found chiefly in Siberia and Kamtchatka, and hunted for its fur. Its length, exclusive of the tail, is about 18 inches. Its fur, which is extremely lustrous, and hence of the very highest value, is generally brown, grayish-yellow on the throat, and with small grayish-yellow spots scattered on the sides of the neck. It is densest during winter, and owing to the mode of attachment of the hairs to the skin it may be pressed or smoothed in any direction.

Sable Island, a low-lying island in the Atlantic; 110 miles E. of the central part of Nova Scotia (and not near Cape Sable, at the S. E. corner of Nova Scotia, where there is also a Sable Island). It consists of two parallel sand ridges. The island is dangerous to navigation, and has so frequently been the scene of wrecks, as to be called the "sailor's grave." The Canadian government maintains two lighthouses here. The island is gradually sinking. Early in the 19th century it was 40 miles long; in 1890 it was reduced to 20 miles. Near it there are sandbanks.

Sabot, a wooden shoe made of one piece hollowed out by boring tools and scrapers. Sabots are worn by the peasants of France, Belgium, etc.

Saccomyidæ, in zoölogy, the pouched gopher family, comprising rodents which have large and distinct external cheek pouches, pelage composed of stiff hairs with no under fur, and the upper lips not cleft. The pouched gopher, pocket gopher, or pouched rat, of the Northwestern States, is 8 to 10 inches long to the tail, which is one to two inches. Its cheek pouches are used mainly or wholly to convey food into the burrows, to be stored up or eaten at leisure.

Saccopharynx, a genus of Muræniдæ, with a single species, a deep-sea conger eel, of which only three specimens have been observed. The specimens known have been found floating on the surface of the North Atlantic with their stomachs much distended. They attain a length of several feet.

Sachs, Hans, the most distinguished meistersinger of Germany in the 16th century, born in Nuremberg, Germany, Nov. 5, 1494. He learned the trade of a shoemaker, commenced business in his native city, married (1519), and prospered. He took lessons under one of the chief meistersingers of Nuremberg, made verses himself. As a staunch follower of Luther, and an ardent advocate of his teachings, Sachs succeeded in imparting to his hymns a fervor which considerably aided the spread of the Reformation. He died in Nuremberg, Jan. 19, 1576.

Sack, formerly a general name for the different sorts of dry wines, extensively used in England in the 16th century. Also a term applied to the plundering of a town or city.

Sack Tree, a stately forest tree, growing on the Western Ghauts, etc. Bags are manufactured from it. A branch is cut corresponding to the length and diameter of the sack required. After being soaked it is beaten with clubs till the bark separates from the wood. The sack formed of the bark is turned inside out, and pulled down while the wood is sawed off, a small piece, however, being left to form the bottom.

Sackville-West, Sir Lionel Sackville, an English diplomatist; born July 19, 1827; was British minister to the United States in 1881–1888. He received his passports from President Cleveland for having written a letter during the presidential campaign in which he advised a vote for the Democratic ticket as conducing to British interests, in answer to a correspondent who represented himself to be a naturalized English citizen desiring political advice.

Saco, Jose Antonio, a Cuban historical writer and publicist; born in Bayamo, Cuba, May 7, 1797. He died in Madrid, Sept. 26, 1879.

Sacrament, the military oath taken by every Roman soldier, pledging him to obey his commander and not to desert his standard.

In Protestant theology, the Protestant Episcopal Church in the United States and the Church of England define a sacrament as "an outward and visible sign of an inward and spiritual grace given unto us, ordained by Christ Himself, as a means whereby we receive the same and a pledge to assure us thereof." They recognize two only

as generally necessary to salvation, Baptism, and the Supper of the Lord.

In Roman Catholic theology, a visible sign, instituted by Christ, which confers by the performance of the act sanctifying grace on man. The Council of Trent defines that the Sacraments of the New Law were instituted by our Lord, and are neither more nor fewer than seven in number: Baptism, confirmation, eucharist, penance, extreme unction, holy orders, and matrimony. The first five are necessary for all Christians, the last two are necessary only for the community.

Sacramental, in Roman Catholic theology, a name given to rites which bear some outward resemblance to the sacraments, but which are not of divine institution. They are: the prayers of the Church; holy water, blessed ashes, palms and candles, blessed bread; the general confession in the mass and office; almsgiving, and the blessings of bishops and abbots.

Sacramento, a city, capital of the State of California; at the confluence of the Sacramento and American rivers, at the head of low water navigation, 96 miles N. E. of San Francisco. It is built on a broad, low plain and has strong levees as a protection against floods. It has a semi-tropical climate and vegetation is most luxuriant. There are a number of National and State banks. Assessed property valuation is nearly $17,000,000.

The streets are well laid out, and mostly lighted by electricity. The State capitol stands in a beautiful plaza covering 30 acres. Within the plaza are the State printing office and the Exposition Building of the State Agricultural Society. In the latter the resources of the State are annually exhibited.

Capt. John A. Sutter built a fort here in 1839, but the city was not settled till 1848, after the discovery of gold. The first house was built in 1849. Sacramento was made the State capital in 1854, and received its city charter in 1863. It has suffered severely twice from fire and twice from inundation. Pop. (1900) 29,282.

Sacred Heart, in the Roman Church, the physical heart of Christ, considered, not as mere flesh, but as united to the divinity. It is the object of a special devotion, founded in the latter part of the 17th century by a French nun. The feast of the Sacred Heart is celebrated on the Friday (in England on the Sunday) after the octave of Corpus Christi.

Sacred War, a war about sacred places or about religion. Four sacred wars were waged in Greece (595–338 B. C.) chiefly for the defense of the temple of Delphi and the sacred territory surrounding it. A Mohammedan war for the faith is called a Jihad. The Crusades and the wars of the Reformation were sacred wars. The quarrel which led to the Crimean War was at first a dispute between Russia and France about sacred spots at Jerusalem. When Russia fights she uniformly gives out that it is a holy war.

Sacrifice, the offering of anything to God or to any deity. Also that which is sacrificed, offered, or consecrated to God or to any deity or divinity; an immolated victim, or an offering of any kind, laid on an altar or otherwise religiously presented by way of thanksgiving, atonement, or conciliation. Sacrifices form an important part of all early forms of religion.

In theology, the evangelical doctrine is that the sacrifices of the older economy were types and shadows of the atoning sacrifice made by Christ. It is held that when Jesus died, His sacrifice once for all satisfied Divine justice, and no other was requisite, or would, if offered, be accepted.

Sacrilege, in a general sense, the violation or profaning of sacred things; more strictly the alienating to laymen, or common purposes, what was given to religious persons and pious uses. Church robbery, or the taking things out of a holy place is sacrilege.

Sacrum, in anatomy, the bony structure which forms the basis or inferior extremity of the vertebral column. The human sacrum forms the back part of the pelvis, is roughly triangular in shape, consists of five united vertebræ, and from its solidity it is well adapted to serve as the keystone of the pelvic arch, being wedged in between and articulating with the haunch-bones. In most mammals the number of vertebræ forming the sacrum is smaller than in man. In birds the lowest number is about 10. Fishes

possess no sacrum at all. The sacrum in man is fully ossified and completed in development from the 25th to the 30th year of life, but the component parts can generally be perceived.

Saddle, a kind of seat for a horse's back, contrived for the safety and comfort of the rider.

Sadducees, one of the three Jewish sects. The current tradition, is that the Sadducees derived their name from a certain Zadok, a disciple of Antigonus of Soko (200–170 B. C.). In the opinion of others, the Zadok from whom they derive their name was the priest who declared in favor of Solomon when the High Priest Abiathar adhered to Adonijah. His descendants had a subsequent preëminence. Not that the Sadducees became a party so early, or that Zadok was their founder; but that some of them may have been his descendants, and admired his fidelity to the government. It was their desire to be equally faithful. All the Jews admitted that the Mosaic law was given at Sinai by Jehovah. Most of the people believed that an oral law of Moses had similarly come from God. The Sadducees rejected this view, and would accept nothing beyond the written word. In the Mosaic law there is no reference to a state of rewards and punishments in a future world. When Jesus proves the resurrection from the Pentateuch, He does so by an inference, there being no direct passage which He can quote. The Sadducees denied the resurrection from the dead. Epiphanius and some other of the fathers assert that the Sadducees rejected all the Old Testament but the Pentateuch. Probably, these writers confounded the Sadducees with the Samaritans. In Acts xxiii: 8, it is stated that they say that "there is neither angel nor spirit." It is surprising that a sect with these views should, at least at one time, have almost monopolized the highest places in the priesthood; yet such was the case, at least temporarily. But, with all their sacred office and worldly rank, they had no hold on the common people. It is probable that, when Christianity spread a belief in the resurrection, the Sadducees must have still further lost ground; but they revived, and still exist, under the name of Karaites.

Sadi, or **Saadi,** the most celebrated didactic poet of Persia; born in Shiraz, Persia, about the end of the 12th century. In his youth he visited Hindustan, Syria, Palestine, Abyssinia, and made several pilgrimages to Mecca and Medina. While in Syria he was taken by the Crusaders, and compelled to labor as a slave at the fortifications of Tripoli. After about 50 years of wandering he returned to his native city, delighting everybody with his poems and sage precepts. He died about the end of the 13th century.

Sadtler, Samuel Philip, an American chemist; born in Pine Grove, Pa., July 18, 1847; was graduated at Pennsylvania College in 1867, and at the Lawrence Scientific School, Harvard University, in 1870. He was a member of the committee of revision of the "United States Pharmacopœia," and edited the chemical articles in the American reprint of the "Encyclopedia Britannica," and the 15th, 16th, 17th, and 18th editions of the "United States Dispensatory."

Sæmund the Learned, an Icelandic scholar of the 12th century. He traveled widely in pursuit of learning, visiting Paris and Rome, and afterward was a priest at Oddi. He was unknown to scholars till about 1643, when the then newly discovered "Elder Edda" was ascribed to him. Sæmund had in his day a great reputation for learning, and was also regarded as a magician.

Safe, a receptacle for valuables, of iron or steel, or both combined. A safe to answer all requirements should be fire, explosive, acid, drill, and wedge proof.

Safed, one of the four holy cities of the modern Jews in Palestine; in horseshoe shape round a hill 2,700 feet above the Mediterranean; 6 miles N. W. of the Sea of Galilee. The Jewish colony has been settled here since the 16th century, and embraces many immigrants from Poland.

Safety Valve, a valve which automatically opens to permit steam to escape from the boiler in order to prevent its explosion.

Safflower, or **Bastard Saffron** (Carthamus tinctorius), a large thistle-like plant with orange-colored flowers, cultivated in China, India,

Egypt, and in the S. of Europe. An oil is expressed from the seeds, which is used as a lamp oil. The dried flowers afford two coloring matters, a yellow and a red, the latter being that for which they are most valued. They are chiefly used for dyeing silk. Mixed with finely-powdered talc, safflower forms a common variety of rouge.

Safford, James Merrill, an American geologist; born in Zanesville, O., Aug. 13, 1822; was graduated at the Ohio State University in 1844; was State geologist of Tennessee in 1854–1860; was reappointed in 1871; and accepted the chair of natural science at Vanderbilt University in 1875.

Saffron, in botany, a species of the Crocus with light purple flowers which come out in autumn. It grows in the S. of Europe and in parts of Asia. The Spanish variety is the best for commercial purposes, though it is said that 100,000 flowers are necessary to produce one pound of saffron. They have an orange or brownish-red color, yellow in the narrower part, and an agreeable aromatic odor.

SAFFRON: CROCUS SATIVUS.

Sagapenum, a fetid gum-resin brought from Persia and Alexandria, and generally believed to be furnished by some species of the genus Ferula. It occurs either in tears or irregular masses of a dirty brownish color, containing in the interior white or yellowish grains. It has an odor of garlic, and a hot, acrid, slightly bitter taste. Occasionally used in medicine.

Sagard, Theodat Gabriel, a noted French missionary to the Huron Indians in the 17th century. He wrote: "Travels to the Huron country, situate in America, toward the Freshwater sea and the uttermost limits of New France, called Canada; wherein is treated of all matters touching the country, the manners and character of the savages, their government and their ways, as well in their own country as when roaming; of their faith and belief; with a dictionary of the Huron language."

Sagasta, Praxedes Mateo, a Spanish statesman; born in Torrecilla, July 21, 1827; became an engineer, but taking part in insurrections had twice to flee for a time to France. He had a place in Prim's cabinet (1868); supported Amadeus; held office under Serrano; and under the new monarchy became leader of the Liberals, being premier 1897–1899, thus conducting public affairs during the trying period of the Spanish-American War.

SAGE.
a, flower.

Sage, a plant much used for flavoring meats, etc. It has blue flowers, and has run into many varieties. The Chinese use it as a tonic for debility of the stomach and nerves.

Sage, Henry Williams, an American philanthropist; born in Middletown, Conn., Jan. 31, 1814; became interested in the lumber regions of Canada and the West, where he bought large tracts of timber and became one of the most extensive land owners in Michigan. He was elected to the Legislature in 1847 and subsequently associated himself with many philanthropic schemes. He was elected a trustee of Cornell University in 1870. He died in Ithaca, N. Y., Sept, 17, 1897.

Sage, Russell, capitalist, born in Shenandoah, Oneida county, N. Y., Aug. 4, 1816. Attended school winters; began as an errand boy in a grocery store, became a retail and then a wholesale grocer, and was meantime alderman, treasurer of Renselaer county, and member of Congress; removed to New York in 1863, and entered Wall street, where he has amassed a vast fortune, but still goes to work every secular day.

Sage Brush, a low irregular shrub, growing in dry alkaline soils of the North American plains.

Sage Cock, called also cock of the plains. It is the largest of the American grouse, and the male has a distinctive character in the bare spaces of orange-colored skin on each side of the neck, which he inflates during the mating season. Range from the Black Hills to California and Oregon, and from British Columbia nearly to Arizona.

Sageretia, in botany, a small shrub, often thorny, with slender, half-climbing branches, and black or dark-brown fruit; growing in China, the Himalayas, and the Salt and Suleiman ranges; its leaves are used as a substitute for tea, and its fruit is eaten in China and India.

Sages of Greece, Seven, Solon, Chilo, Pittacus, Bias, Periander, Cleobulus, and Thales are those most generally named as the seven wise men of Greece. Solon was compelled to engage in commercial adventures, and the celebrated law-giver sought foreign shores. His work on returning to Athens was that of a patriot, who sought earnestly to compose the distractions, social and political, which then rent the city. His motto was, "Know thyself." Chilo, was a Spartan, who early directed his attention to public affairs, and many of whose maxims are quoted by the ancient writers; one of the most famous of these was, "Consider the end." Pittacus was a native of Mitylene, in Lesbos, became a soldier, rose to supreme power in the State, acted with great patriotism, placed severe restrictions on drunkenness, and having done much for the people, voluntarily resigned his power. "Know thy opportunity," is attributed to him. Bias, a native of Ionia, was a poetical philosopher, who studied the laws of his country. Said Bias: "Most men are bad." Periander was distinguished for his love of science and literature, which entitled him to be ranked among the seven wise men of Greece. Of Cleobulus, of the island of Rhodes, but little is known. His favorite maxim was, "Moderation is best." Thales, a celebrated philosopher, born at Miletus, and founder of the Ionic sect, traveled like Solon in quest of knowledge, and learned geometry, philosophy, and astronomy. He is said also to have invented several fundamental propositions which were afterward incorporated into the elements of Euclid. He approached so near to the knowledge of the true length of the solar revolutions that he corrected the Greek calendar and made their year contain 365 days.

Sagina, in botany, the pearlwort, a low herb of the chickweed family. Known species eight, found in the temperate zones.

Sagittarius (the Archer), in astronomy, the ninth sign of the zodiac, into which the sun enters Nov. 22. The constellation consists of eight visible stars. It is represented on celestial globes and charts by the figure of a centaur in the act of shooting an arrow from his bow.

Sagittary, a terrible archer, half beast and half man, whose eyes sparkled like fire, and struck dead like lightning. He is introduced into the Trojan armies by Guido da Colonna.

Sagittate, in botany, a term applied to the form of leaf shaped like the head of an arrow; triangular, hollowed at the base, with angles at the hinder part.

Sagittated Calamary, in zoölogy, a free swimming marine worm, used for bait in the cod-fishery on the banks of Newfoundland.

Sago, a nutritive farinaceous substance obtained from the pith of several species of palms.

Sago Starch, the starch extracted from the stem of Sagus rumphii, and probably of other species of palm. Sago is largely used in the manufacture of the so-called soluble cocoas, and is also frequently added to the cheaper varieties of arrow root.

Sagoin, or **Sagouin,** the native South American name of Brazilian monkeys of small size, and remarkably light, active, and graceful in their movements.

Saguerus, a genus of palms from 20 to 25 feet high, and is very common in the islands of the Indian archipelago, the Moluccas, and the Philippines. The branches are wounded and then pounded without detaching them from the tree. This causes them to yield a quantity of saccharine matter, which may be boiled into sugar or be converted by fermentation into intoxicating liquor. When the trees are exhausted by this drain on their energies, sago is obtained from the trunk, as much sometimes as 150 or 200 pounds from a single tree. The cabbage-like bunch of young leaves at the summit of the stem is eaten, the leaf stalks yield strong and useful fibers, and the midrib of the leaves is used for pens and for tubes through which to blow arrows.

Sagus, in botany, a genus of palms, yielding the finest sago. They form great forests in the Moluccas. The bristles of the Malay plant, are dried and used for sewing linen garments.

Sahara (Arabic Sah'ra), the vast desert region of North Africa, stretching from the Atlantic to the Nile, and from the S. confines of Morocco, Algeria, Tunis, and Tripoli S. to the vicinity of the Niger and Lake Tchad. It is usual to regard the Libyan Desert, lying between Egypt, the Central Sudan, and Tripoli, as a separate division. It was long customary to assert that the Sahara was the bed of an ancient inland sea. Since the French became masters of Algeria, they have completely revolutionized our knowledge. The surface, instead of being uniform and depressed below sea-level, is highly diversified, and attains in one place an altitude of fully 8,000 feet. There are still several extensive tracts as to which we have next to no information.

From the neighborhood of Cape Blanco in the W. a vast bow or semicircle of sand dunes stretches round the N. side of the Sahara to Fezzan, skirting the Atlas Mountains and the mountains of Algeria. This long belt of sand hills varies in width from 50 to 300 miles, called Erg. The hills rise 300 feet though the average elevation is about 70 feet. They are composed of pure quartz sand, stationary in character, though constantly changing their outward form and configuration; and lie as a rule in parallel chains. Water is nearly always to be found below the surface in the hollows between the different chains and a few dry plants struggle to maintain a miserable existence. S. of Algeria, on the other side of the Erg, the country rises into the lofty plateau of Ahaggar (4,000 feet), which fills all the middle parts of the Sahara. Its surface runs up into veritable mountains 6,500 high, which are covered with snow for three months in the year. On the S. it falls again toward the basins of the Niger and Lake Tchad; there are mountain ranges along the E. side reaching 8,000 feet in Mount Tusidde in the Tibbu country, and a mountain knot in the oasis of Air, which reaches 6,500 feet. Mountainous tracts occur also in the W., between Morocco and Timbuctoo, but of inferior elevation (2,000 feet). These mountainous parts embrace many deep valleys, most of them seamed with the dry beds of ancient rivers, as the Igharghar and the Mya. These valleys always yield an abundance of water, if not on the surface in the watercourses, then a short distance below it, and are mostly inhabited, and grazed by the cattle and sheep and camels of the natives.

Another characteristic type of Saharan landscape is a low plateau strewn with rough blocks of granite and other rocks, and perfectly barren. These elevated stone fields, called "hammada" — alternate with tracts of bare flat sand, with broad marshes, where water has stood and evaporated,

leaving salt behind it, and with extensive tracts of small, polished, smoothly-rounded stones. In many parts of the Sahara, especially in the valleys of the mountainous parts, in the recesses or bays at the foot of the hills, alongside the water-courses, and in the hollows of the sand dunes, in all which localities water is wont to exist, there are oases — habitable, cultivable spots, islands of verdure in the midst of the ocean of desert. These oases mark the caravan routes between the Central Sudan States and the Mediterranean.

The Romans had colonies of military posts a long way S., in what are now desert regions; and both Herodotus and Pliny tell us that the elephant, the rhinoceros, and the crocodile, all animals that only live near abundant supplies of water, were common throughout North Africa in their day. None of the Egyptian inscriptions or animal sculptures represent the camel, nor do the Greek and Roman historians mention it either as being a denizen of North Africa. The camel is now the principal carrier across the Sahara, and must have been introduced since the beginning of the Christian era.

The terrors of the desert sand storm have often been described. Thick deposits of Sahara quartz sand dust were discovered by the "Challenger" on the floor of the Atlantic a long way W. of the African coast. The sand in the dunes is so dry that in several places the tread of a camel or man will make the hill hum, or even thunder, as a vast quantity of it slips down to a lower level. The range of temperature is exceedingly great; often the thermometer falls from considerably more than 100° F. during the day to just below freezing-point at night. In the W. of the Sahara the daily average is 85° in the shade in the month of May. Rain falls in parts of the Sahara, but in most districts after intervals of two to five years. After a fall of rain it is not unusual to see the river beds in the mountainous regions filled with foaming torrents. The atmosphere is so dry and clear that objects can be seen and sounds heard at a vast distance. Owing to the extreme dryness of the air, the Sahara is very healthy.

The plant life is very rich in the oases, the date palm, which has its home in these regions, being the principal ornament as well as the most valuable possession of these fertile spots. In the desert regions the plant life is confined principally to tamarisks, prickly acacias and similar thorny shrubs and trees, salsolaceæ, and coarse grasses. The animals most commonly met with include the giraffe, two or three kinds of antelope, wild cattle, the wild ass, desert fox, jackal, hare, lion, ostrich, desert lark, crow, viper, python, locusts, flies. The people keep as domestic animals the camel, horse, ox, sheep, and goat.

The human inhabitants, who are estimated altogether at between 1,500,000 and 2,500,000, consist of Moors, Tuareg, Tibbu, Negroes, Arabs, and Jews. The Tuareg are great traders and control the principal caravan routes. The Tibbu, who number about 200,000, and are regarded as being ethnically intermediate between the Berbers and the Negroes, occupy the oases between Fezzan and Lake Tchad. The Arabs of pure stock are very few.

The boring of artesian wells, and with the water so obtained irrigating the soil in the vicinity, was apparently known to the ancients, and has been prosecuted by the French with great energy since 1856. By 1890 they had made a string of these wells from the cultivated districts of Algeria as far as Tugurt, on the edge of the desert S. of Biskra. Water is generally found at depths varying from 10 to 300 feet, and in great abundance. Wherever these wells have been bored the date palm groves and the orchards have increased greatly in extent, and the population has become much denser.

Saiga, in zoölogy, an antelope found in Eastern Europe and Western Asia. They differ so much from all other antelopes that some naturalists have made them a distinct family.

Sail, a piece of canvas cloth spread to catch the wind, so as to cause a ship to move through the water.

Sailing, the act of moving on water, or the movement of a ship or vessel impelled by the action of wind on her sails; act of setting sail or beginning a voyage; also, smooth impulsion through the air, as in a **balloon,** or the aërial passage of a bird.

Sainfoin, a plant, native of Central and Southern Europe and parts of Asia. It has been in cultivation for centuries for the purposes of supplying fodder for cattle either in the green state or converted into hay. It is a pretty plant with narrow leaves and bright pink flowers.

Saint, a name applied in the New Testament to the members of the Christian community generally, but restricted by ecclesiastical usage from very early times to those who have been specially remarkable for their personal virtues and their eminent services to the cause of religion.

St. Andrews, a town of Scotland; on a rocky plateau at the edge of St. Andrews Bay, 42 miles N. N. E. of Edinburgh. From the number and nature of the remains of ancient burial found in and around the city there can be little doubt that there was a settlement here in prehistoric times. The monkish legend, assigned its ecclesiastical origin to St. Regulus, who brought bones of St. Andrew from Patras in the 4th century, and was wrecked at Muckros, now St. Andrews. There is reason for believing not only that those relics were brought in the 8th century, but that before the end of the 6th, Cainnech, the patron saint of Kilkenny, had founded a monastery at Rig-Monadh, the Royal Mount. Early in the 10th century it became the seat of the high bishop of the Scotch. The Augustinian Priory, founded in 1144, was the richest and greatest of all the religious houses of Scotland. The cathedral, founded about 1160, and consecrated in 1318, was stripped of its images and ornaments in 1559, and afterward fell into ruin. The extreme length inside is 355 feet. The bishop's palace or castle, first built in 1200, was frequently demolished and rebuilt, and is now a ruin. George Wishart and other martyrs were confined in its dungeon, and Cardinal Beaton was slain within its walls. St. Rule's Tower has probably occasioned more discussion and perplexed more archæologists than any other building in Scotland. Its arches, as well as that of its roofless chapel, approach the horseshoe in form. Of the Black Friars Monastery a portion of the chapel remains; but of the Grey Friars almost nothing. The schools of St. Andrews were noted in 1120; but the university, the first in Scotland, only dates from 1411. The town was erected into a free burgh between 1144 and 1153. The manufacture of golf clubs and balls is naturally a thriving industry, St. Andrews being known all over the world as the headquarters of golf. It is a popular watering place and summer resort.

St. Augustine, a city, port of entry, and county-seat of St. John co., Florida; on the Matanzas river, near the Atlantic Ocean; 36 miles S. of Jacksonville. It occupies a peninsula formed by the Matanzas river on the E. and the St. Sebastian river on the S. and W. Directly in front is Anastasia Island, forming a breakwater. The city is principally a winter resort. The climate is mild and equable. St. Augustine is the oldest town in the United States, a fort having been built here by the Spaniards in 1565. As early as 1512 Ponce de Leon landed near the site of the city. In 1763 it became a British possession, and during the Revolutionary War was an important military depot. Later it again passed into the hands of Spain, and was ceded to the United States in 1821.

St. Bartholomew, or **St. Barthelemy,** a French West Indian island, 190 miles E. of Porto Rico; area, 8 square miles. The treeless surface rises to 1,003 feet; the climate is very dry. French from 1648 till 1784, the island then was Swedish till 1877, when it was bought back by France for $80,000.

St. Bartholomew, Massacre of, a massacre of the Huguenots which took place in Paris, France, beginning on the night of Aug. 23–24 (St. Bartholomew's day), 1572. A large number of prominent Huguenots had been invited to the royal palace to participate in the wedding festivities of Henry of Navarre. While these guests were in the palace they where slaughtered without mercy, and at a signal the massacre quickly spread over the city. The anti-Huguenot leaders were Charles IX., the queen-mother Catharine de Medici, and the Duke of Guise. The massacre spread over France and about 30,000 lives were lost. A religious war followed.

St. Bernard Dog, Great, a species of dog which gets its name from the Hospice of St. Bernard, where it has long been kept by the monks to aid them in rescuing perishing travelers. This famous dog, according to the traditions of the monastery, is the result of a cross between a Danish bull-bitch and a mastiff, a native hill dog. Many of the finest St. Bernards measure over 30 inches high at the shoulder and weigh over 150 pounds. On account of his great size and weight the St. Bernard often moves in an awkward manner, a defect which should be avoided. St. Bernards, though occupying a great deal of space, are so handsome that they are kept as companions in great numbers; as a rule they are good tempered, though many are not to be trusted.

ST. BERNARD DOG.

St. Clair, a lake in North America, between Lake Huron and Lake Erie, and connected with the former by St. Clair river, with the latter by Detroit river. It is 30 miles long, greatest breadth 24 miles, area 360 square miles. It contains several fine islands. The river St. Clair, which separates Canada and the United States, is about 40 miles long, 1 mile wide, and navigable.

St. Clair, Arthur, an American military officer; born in Thurso, Scotland, in 1734. He was at Louisburg in 1758 and Quebec in 1759; engaged in the battles of Trenton and Princeton; was in command in 1777 at Ticonderoga; was at the battle of Yorktown; president of Congress in 1787; governor of Northwest Territory in 1789–1802. The expeditionary force against the Miami Indians, numbering 1,400, commanded by him, was cut to pieces near Miami village in 1791. He resigned his command in 1792, and died near Greensburg, Pa., Aug. 31, 1818.

St. Cloud, a town of France, in the department of Seine-et-Oise; on an eminence near the Seine, 10 miles W. of Paris. Henry III. was assassinated here in 1589 by the fanatical monk Jacques Clement. St. Cloud was long famous on account of its magnificent chateau, built by Louis XIV.'s brother, the Duke of Orleans. Napoleon planned and carried out here the coup of 18th Brumaire, and after he became emperor made this chateau his favorite place of residence. It was destroyed during the siege of 1780.

St. Croix, a West Indian island, formerly belonging to Denmark, 40 miles S. S. E. of St. Thomas; area, 74 square miles; pop. 18,430; discovered by Columbus. The island with the entire Danish West Indian group passed into the possession of the United States by purchase in 1902.

St. Cuthbert, an English bishop; born near Melrose, England; early in the 7th century. He was successively prior of the monasteries of Melrose and Lindisfarne, retired afterward to the lone and desolate isle of Farne, where he might enjoy a life of solitude. He finally yielded to the persuasion of the Northumbrian king, Oswy, and took the bishopric of the province of Lindisfarne. He held this office for two years, when, worn out by labors and austerities, he died in the island of Farne, March 20, 687.

St. Cyril of Alexandria, an Egyptian bishop; born in Alexandria, Egypt, about 376. He succeeded his uncle Theophilus as Bishop of Alexandria in 412. He compelled the Novatians to silence, banished the Jews, and caused Nestorius to be condemned and deposed. A subsequent council favoring Nestorius, excommunicated and deposed his opponent. The emperor condemned both sides, and ordered the rival champions to be imprisoned. The intercession of Rome caused this sentence against Cyril to be abrogated. He died in Alexandria in June, 444.

St. Cyril of Jerusalem, a Church father; born in or near Jerusalem, Palestine, about 315. He was elected bishop of his native city in 351. He was engaged in hot conflict with his metropolitans, the Arian bishop Acacius of Cæsarea, who caused him to be twice deposed. He was for the second time restored to his episcopate in 383. Soon after, his old enemy Acacius died, but Cyril was involved in new difficulties. After considerable strife Cyril was banished by order of the Emperor Valens in 367; nor did he return till the emperor's death in 378. He died in 386.

Sainte-Beuve, Charles Augustin, a French writer, and one of the greatest of modern critics; born in Boulogne, France, in 1804. He studied medicine at Paris, but abandoned that science in favor of literature, his first work of importance being on the French literature of the 16th century. In 1840 he was appointed conservator of the Mazarin Library, and in 1845 admitted a member of the French Academy. In 1852 he was appointed Professor of Latin Poetry in the College of France; he also lectured for some years on French literature at the Ecole Normale Superieure. Most of his critical writings have been republished in various editions. He also wrote three volumes of poetry. He died in Paris in 1869.

Sainte-Claire, Deville, Henri, Etienne, a French chemist; born in St. Thomas, W. I., March 11, 1818; was educated in Paris. It was he who first produced aluminum (1855) and platinum in commercial quantities, and demonstrated the general theory of the dissociation of chemical compounds at a high temperature. Died in Paris, France, July 1, 1881.

St. Elmo's Fire, a peculiar electrical phenomenon. Just preceding a storm the atmosphere often becomes charged with electricity which flows from the coluds. This makes itself visible in small, brush-like flames appearing on the sharp edges or points of different bodies. At sea, where it is a very common occurrence. it has been regarded by sailors with superstitious awe and dread from the earliest times.

St. Etienne, one of the most important industrial towns in France, in the department of Loire, on a tributary of the Loire, 36 miles S. W. of Lyons and 312 S. S. E. of Paris. It is built in the midst of the second largest coal field of France, in which about 17,000 men are employed, and from which 3,000,000 tons of coal are extracted annually. The chief industries are in iron and steel and in ribbons. Its hardware workshops employ more than 20,000 workpeople, and turn out steel and iron plates, gun armor, iron masts, large castings for machinery, firearms, locks, cutlery, files, nails, tools, etc. The government small arms factory has since the period of the Revolution supplied nearly all the muskets and rifles and revolvers for the army. About 40,000 persons, mostly hand workers in their own homes, are engaged in the town and its vicinity in making ribbons, laces, fringes, and similar ornamental work. Besides these branches of industry, hats, pottery, and hemp cables are made. The coal mines began to be worked in the 14th century, but only on an extensive scale in the end of the 18th. The town was twice captured by the Huguenots, in 1563 and 1570, and between this last date and 1629 it suffered terribly on three occasions from the plague. The first railways in France were built from St. Etienne, one in 1828 to Andrezieu, the other in 1831 to Lyons. Pop. 136,-030.

Saint Gaudens, Augustus, an American sculptor; born in Dublin, Ireland, March 1, 1848; came to the United States in infancy; studied art at Cooper Institute, New York city; at the National Academy of Design, and at Paris, where he attended the Ecole des Beaux Arts. In 1871, while in Rome he produced his first figure, "Hiawatha," but returned to the United States in 1872. He designed the Medal of Award of the Columbian Exposition, and a number of presentation medals authorized by Congress.

St. Gotthard, a mountain knot of the Alps, in the Swiss cantons of Uri, Grisons, Ticino, and Valais, 9,850 feet high. It bears one of the most celebrated of the Alpine passes from Switzerland to Italy. The road that crosses this pass (6,936 feet) leads from the shores of Lake Lucerne to

the shores of Lago Maggiore; but down to 1820 it was not wider than 13 feet. In 1820–1824 it was widened to 18 feet and smoothed for carriages. Near the summit of the pass stand two hotels and a hospice. Since 1882 a railway has climbed up the lower slopes, and then burrowed through it in a tunnel. This tunnel was begun in 1872 and finished in 1880; it extends from Goschenen (at a height of 3,639 feet) in Uri to Airolo (3,757 feet) in Ticino, measures 9¼ miles in length, is 26 feet wide, and 21 high, rises with a gradient that reaches on an average 26 in 100 feet, and cost $11,350,000 to make.

St. Helena, a lonely island in the Atlantic, 1,200 miles from the W. coast of Africa, 1,695 from Cape Town, and 4,477 from Southampton; length, 10 miles; width, 8 miles; area, 47 square miles. It is part of an old volcano and reaches 2,823 feet in High Hill. Its shores are perpendicular cliffs 600 to 2,000 feet high. Previous to the cutting of the Suez Canal St. Helena was a favorite port of call for vessels bound to and from India by the Cape of Good Hope. Jamestown, the capital, on the N. W. coast, has been made a second-class imperial coaling station, and carefully fortified. St. Helena was discovered by the Portuguese in 1502, and taken possession of by the British East India Company in 1651. They remained masters of the island down to 1834; since that time it has been administered by a governor and an executive council of four members. The island is chiefly celebrated as the place of Napoleon Bonaparte's imprisonment from 1815 to his death in 1821.

St. James's Palace, a palace in London, England. Originally a hospital dedicated to St. James, it was reconstructed and made a manor by Henry VIII., who also annexed to it a park, which he enclosed with a brick wall, to connect St. James's with Whitehall. Here Queen Mary died (1558); Charles I. slept here the night before his execution; and here Charles II., the Old Pretender, and George IV. were born. When Whitehall was burned in 1697, St. James's became the regular London residence of the British sovereigns, and it continued to be so till Queen Victoria's time. The Court of St. James's is a frequent designation of the British court.

St. John Charles Edward, an American physicist; born in Allen, Mich., March 15, 1857; was graduated at the Michigan Normal College in 1876, and studied physics abroad; was instructor of physics at the Michigan Normal College, Ypsilanti, in 1885–1892; associate professor of the same at Oberlin College in 1897–1899; and then took the chair of physics and astronomy there.

St. John, John Pierce, an American lawyer; born in Brookville, Ind., Feb. 25, 1833; received a common school education; entered the Union army during the Civil War and served as captain and lieutenant-colonel; removed to Kansas after the war and was elected to the Senate of that State in 1872; was governor of Kansas in 1879–1883. He was a candidate for President of the United States on the Prohibition ticket in 1884. He later became independent in politics.

St. John's College, an educational non-sectarian institution in Annapolis, Md.; founded in 1789.

St. John's College, an educational institution in Fordham, N. Y.; founded in 1841 under the auspices of the Roman Catholic Church.

St. John's Wort, a numerous genus of herbs and shrubs widely distributed, both in the New and the Old World, particularly abundant in North America, Western Asia, and Southern Europe; it occurs also within the tropics. The plant has long been credited with powerful medicinal properties, but finds no place in the pharmacopœias, nor is it recognized by regular practitioners. In France and Germany the plant is ceremoniously gathered on St. John's Day by the common people as a charm for evil spirits, storms, and thunder; in North Wales a similar custom still exists, and in Scotland it was formerly worn as a charm on the person against all malignant influences.

St. Joseph, a city and county-seat of Buchanan co., Mo.; on the Missouri river; 60 miles N. W. of Kansas City. It is the third city in the State in population and is one of the wealthiest cities of its size in the United States.

St. Joseph has upward of 400 manufacturing establishments, with a capital exceeding $10,000,000, and employing more than 10,000 persons. The chief manufactures are clothing, shirts, overalls, flour, and grist mill products, boots and shoes, furniture, machinery, packed meat, and woolen blankets. The city is the trade center of a large and rich agricultural region. It is also an important shipping point for cattle, hogs, and grain, and has stock yards covering about 450 acres. The assessed property valuation exceeds $23,000,000, and the total bonded debt is about $1,000,000.

The city has an area of 9 square miles. The sewer system covers 38 miles, and the streets are lighted by electricity. There is a public school enrollment of over 9,600 pupils, and the annual expenditure for education is nearly $140,000. The annual cost of maintaining the city government is about $320,000.

The city was established by Joseph Ribideaux in 1843; incorporated as a town in 1845; and chartered as a city in 1885. After the discovery of gold in California it became prominent as the starting point for mining parties on their way across the prairies. During the Civil War it was fortified by the Federal government. Pop. (1900) 102,979.

Saint-Just, Antoine Louis Leon Florelle de, a French revolutionist; born in 1767. He adopted with enthusiasm the principles of the Revolution, became the right hand of Robespierre, and was one of the most energetic and resolute members of the Mountain party. He fell with Robespierre through the events of the 9th Thermidor (July 27, 1794), and perished on the same scaffold with him on the following day, July 28, 1794.

St. Lawrence, a river of North America, forming in its upper reaches part of the N. boundary of the United States, but for the most part confined to the Canadian Dominion. It issues from Lake Ontario at Kingston, where the name begins to be applied to the river, though the remotest source of the highest feeder of its basin, the St. Louis, which enters the W. end of Lake Superior, is in the N. E. of Minnesota. Passing through the chain of Great Lakes on leaving Lake Ontario, it flows N. E., first through the beautiful district known as the Thousand Isles, from the number of islands large and small (in all about 1,500), which here vary its course, and then forms the wide expanses called Lakes St. Francis, St. Louis, and St. Peter. Below Quebec it forms a broad estuary, and it enters the Gulf of St. Lawrence by a mouth 26 miles wide, between Point des Monts and the Gaspe Peninsula. Length from Lake Ontario to the Gulf 760 miles, to the W. point of Anticosti 1,034 miles. The height of Lake Ontario above sea-level is 246.6 feet of which the river descends 206.75 feet in the 348 miles above Montreal. Since the construction of a ship canal, 27½ feet deep, through Lake St. Peter, the largest merchant vessels afloat have been able to reach Montreal in summer. In the stretches above Montreal the fall of the river bed takes place in a succession of rapids, to avoid which canals have been constructed. The basin of the St. Lawrence is estimated to contain 297,000 square miles, of which 95,000 are covered with the waters of the Great Lakes.

St. Lawrence University, a coeducational institution in Canton, N. Y.; founded in 1858 under the auspices of the Universalist Church.

St. Louis, a port of entry, and chief city of Missouri; on the W. bank of the Mississippi river, 20 miles S. of the mouth of the Missouri. It is the fourth city in the United States in population, and the commercial metropolis of the Mississippi valley. The city is built on rising ground, comprising three terraces, the highest of which is 200 feet above the level of the river; area, 61 square miles; pop. (1900) 575,238.

The city owns an extensive waterworks system, costing $20,000,000. The consumption averages 60,000,000 gallons daily. There are in all 873 miles of streets, of which 432 miles are paved. The sewer system covers 488 miles. The streets are lighted by gas and electricity. The annual death rate averages 15.40 per 1,000.

St. Louis has a park system which constitutes one of its most attractive features. The total area of the parks is 2,268 acres. Forest Park, which comprises 1,370 acres, is the largest,

and although the land is largely unimproved is probably the most beautiful of the parks. Tower Grove Park, covering 276 acres in the S. W. part of the city, was the donation of Henry Shaw, who also gave the city the Missouri Botanical Garden. The Fair Grounds, with 137 acres, contain a one-mile race track, an amphitheater seating 40,000 people, many halls, etc. Carondelet and Lafayette Parks are small but fine specimens of landscape gardening.

The principal public buildings are the massive postoffice and custom house costing more than $6,500,000; the city hall, built at a cost of $2,000,000; the court house; the union railroad station with a train house covering 30 tracks, and used by 21 railroad companies, erected at a cost of $6,500,000; and the Chamber of Commerce building, costing $2,000,000.

The St. Louis bridge, a massive structure, was completed in 1874 at a cost of over $10,000,000. It consists of three spans, the center one being 520 feet long, and the other two 500 feet each. The piers upon which these spans rest are built of limestone carried down to bed rock. The main passage for the accommodation of pedestrians, is 54 feet wide, and below this are two lines of rails. The merchant's bridge, 3 miles N., was completed in 1890 at a cost of $3,000,000. The latter is used exclusively for railroad traffic.

The favorable location of St. Louis in the heart of the vast and fertile Mississippi valley makes it one of the greatest commercial cities in the United States. There is an immense trade in breadstuffs, grain, provisions, lumber, hides, fur, agricultural products, manufactured articles, etc. There are about 7,000 manufacturing establishments, with a combined capital of about $150,000,000, and employing upward of 100,000 persons. St. Louis is one of the largest tobacco manufacturing cities in the world.

The city has direct communication with more than 6,000 miles of rivers. A considerable amount of its foreign trade is entered and cleared at New Orleans.

On Sept. 1, 1900, there were 6 National banks in operation, having a combined capital of $11,400,000; and a surplus fund of $2,775,000; gross earnings, $2,059,844.21; net earnings, $760,986.08.

At the close of the school year 1898–1899 the children of school age aggregated 159,978; the enrollment in public day schools was 76,244, and the private and parochial schools (largely estimated), 26,000; and the average daily attendance in public day schools was 55,006. There were 1,547 teachers; 125 buildings used for school purposes; and public school property of an estimated value of $5,373,642. The institutions of higher education are Washington University, St. Louis University (R. C.), the College of the Christian Brothers, St. Louis School of Fine Arts, Maria Consilia Convent, Training School for Nurses, several medical colleges, dental college, theological seminaries (Luth. and Evan. Luth.), Manual Training School, the State School for the Blind, and the St. Louis Day School for Deaf Mutes.

There are upward of 300 churches in St. Louis, representing all the leading religious sects in the United States. The value of all church property is estimated to be in the neighborhood of $6,000,000.

On Feb. 14, 1764, Auguste Chouteau, with about 30 men, arrived at the site of the city to establish a permanent post. In 1896 the city was swept by a destructive tornado that overthrew many buildings, destroyed shipping and tore out a shore span of the great bridge. Several hundred lives were lost and many rendered homeless. In 1903 active preparations were being made for a great exposition in 1904 to celebrate the Louisiana Purchase in 1803.

St. Lucia, the largest of the Windward Islands, in the West Indies, 42 miles long and from 15 to 20 wide; area, 233 square miles; pop. 47,976. The climate is in the main healthy, a fresh trade wind blowing almost constantly. The capital is Castries.

St. Martin, one of the Lesser Antilles, W. I. Since 1648 it has been divided between France and the Netherlands. The French portion, a dependency of Guadeloupe, has an area of 20 square miles and a population of 3,500. The Dutch portion, a dependency of Curacao, has an area of 18 square miles and a pop. of 3,984.

St. Nicholas, an early bishop of Myra in Lycia, Asia Minor. He is a popular saint in the Roman and the Greek Churches. His feast day, falling on Dec. 6, was once elaborately celebrated in English public schools, the solemnities continuing to Dec. 29. It has long been a custom in certain European countries to keep St. Nicholas' Eve by placing gifts in the shoes or stockings of children. This custom has been transferred to Christmas Eve and the transformed saint is known as Santa Claus (from the Dutch Sant Nicolaus).

St. Olaf College, a coeducational institution in Northfield, Minn.; founded in 1874 under the auspices of the Lutheran Church.

St. Paul, a city, capital of the State of Minnesota, and county-seat of Ramsey co.; on the Mississippi river. The city is built on both sides of the river, which are connected by several bridges including a fine iron structure. The ground on both sides of the river rises in three plateaus, the highest being 200 feet. The main part of the city is on the second and third plateaus, but it also occupies the bottom lands along the river. Area 55 square miles; pop. (1900) 163,065.

The city owns an extensive waterworks system. The reservoirs have a storage capacity of 30,000,000 gallons, and the water is distributed through 244 miles of mains. There are in all 385 miles of streets, of which 50 miles are paved. The sewer system covers about 160 miles. The annual death rate averages 8.47 per 1,000.

The principal public buildings are the Capitol, containing the library of the State Historical Society; the court house and city hall erected at a cost of more than $1,000,000; custom house and postoffice. Besides these there are three free hospitals, and Protestant and Roman Catholic orphan asylums.

The Federal census of 1900 reported 1,591 manufacturing establishments, employing $28,208,389 capital and 17,593 persons; paying $19,464,570 for materials used and $7,669,805 for wages; and yielding products of an aggregate value of $38,541,030.

On Sept. 1, 1900, there were 5 National banks in operation, having a combined capital of $3,800,000, and a surplus fund of $720,000. The gross earnings were $393,251.21, and net earnings, $98,242.54.

At the close of the school year 1898–1899 there were 24,344 pupils enrolled in public day schools, and in private and parochial schools 12,000; and the average daily attendance in public day schools was 19,010. There were 534 teachers; 46 buildings used for public school purposes; and for public property of an estimated value of $2,575,125. The institutions for higher education are Hamline University (M. E.); Concordia College (Luth.); Macalester College (Pres.) St. Paul's and St. Thomas's Seminaries (R. C.); and several medical colleges.

A French Canadian settled on the site of the city in 1838. Three years later, Father Gaultier, a French Catholic priest, founded the first church here, and named it St. Paul, from which the city derived its name. It received its city charter in 1854, and united the suburb of West St. Paul in 1874. Since the latter year there has been such a rapid growth that the outskirts of the city reach those of Minneapolis. These two cities are known as "The Twin Cities of the West."

St. Paul's, a cathedral in London, England, situated on Ludgate Hill, an elevation on the N. bank of the Thames. The site of the present building was originally occupied by a church erected by Ethelbert, King of Kent, in 610. This was destroyed by fire in 1087, and another edifice, Old St. Paul's, was shortly afterward commenced. The structure was in the Gothic style, in the form of a Latin cross, 690 feet long, 130 feet broad with a lead-covered wooden spire rising to the height of 520 feet. Old St. Paul's was much damaged by a fire in 1137, by lightning in 1444, again by fire in 1561, and was utterly destroyed by the great fire in 1666. The ruins remained for about eight years, when the rebuilding was taken in hand by the government of Charles II. (1675–1710). The whole building was completed at a total cost of $7,556,010. It is of Portland stone in the form of a cross. Its length is 510 feet; the width from N. to S. portico 282 feet; the general height i

100 feet. The whole is surmounted by a great dome raised on eight arches. Above the dome is a lantern or gallery terminated above by a ball and gilded cross, 404 feet from the pavement beneath. The elevated portico forming the grand entrance consists of 12 Corinthian columns, with an upper series of eight pillars of the Composite order, supporting a pediment; the front being flanked by two bell-towers 120 feet in height.

St. Peter's, the Cathedral of Rome, the largest and one of the most magnificent churches in Christendom. It is a cruciform building in the Italian style, surmounted by a lofty dome, built on the legendary site of St. Peter's martyrdom; the foundation stone was laid on the 18th of April, 1506. Michael Angelo was appointed architect in 1546. He nearly completed the dome and a large portion of the building before his decease (1564). The nave was finished in 1612, the facade and portico in 1614, and the church was dedicated by Urban VIII. Nov. 18, 1626. The interior diameter of the dome is 139 feet, the exterior diameter 195½ feet; its height from the pavement to the base of the lantern 405 feet; to the top of the cross outside 448 feet. The length of the cathedral within the walls is 613½ feet; the height of the nave near the door 152½ feet; the width 87½ feet. The width of the side aisles is 33¾ feet; the entire width of the nave and side aisles, including the piers that separate them, 197¾ feet. The circumference of the piers which support the dome is 253 feet. The floor of the cathedral covers nearly 5 acres, and its cost is estimated to have exceeded $50,000,000.

St. Petersburg, the capital of the Russian empire, at the head of the Gulf of Finland and the mouth of the Neva. When a strong wind is blowing from the sea its level rises by several feet, and the poorer parts of St. Petersburg are inundated every year; but when the overflow exceeds 10 feet nearly the whole of the city is inundated. Peter I. laid the foundations of his capital in 1702 on one of the islands of the delta and dreamed to make of it a new Amsterdam. The actual connection between Russia and its capital was established through the Neva, which since it was connected by canals with the upper Volga, became the real mouth of the immense basin of the chief river of Russia and its numberless tributaries. Foreign trade and the centralization of all administration in the residence of the emperor have made of St. Petersburg a populous city covering 42 square miles.

The Great Neva, the chief branch of the river, which has within the city itself a width of from 400 to 700 yards, is so deep that large ships can lie alongside its granite embankments. Cronstadt, built on an island 16 miles to the W. of St. Petersburg, is both the fortress and the port of the capital. Two-thirds of the foreign vessels unload within the city itself. The main body of the city, containing more than one-half of its inhabitants as well as all the chief streets, stands on the mainland, on the left bank of the Neva; and a beautiful granite quay, with a long series of palaces and mansions, stretches for 2½ miles. Only two permanent bridges cross the Neva; the other two, built on boats, are removed in autumn and spring. The island Vasilievsky, between the Great and Little Nevas, has at its head the Stock Exchange, surrounded by spacious storehouses, and a row of scientific institutions, all facing the Neva. On the Peterburgskiy Island, between the Little Neva and the Great Neva, stands the old fortress of St. Peter and St. Paul, facing the Winter Palace, and containing the Mint and the cathedral. It has behind it the arsenal, and a series of wide streets bordered by small, mostly wooden houses, chiefly occupied by the poorer civil service functionaries. Farther up the mainland on the right bank of the Neva is covered by the poorer parts of the city, but contains some public buildings and a great number of factories. Numerous islands, separated from each other by small branches into which both Nevas subdivide, and connected together by a great number of wooden bridges, are covered with beautiful parks and summer houses, to which most of the wealthier and middle-class population repair in the summer. The main part of St. Petersburg has for its center the Old Admiral-

ty; its lofty gilded spire and the gilded dome of St. Isaac's Cathedral are among the first sights caught on approaching St. Petersburg by sea. Three streets radiate from it; the first of them is the famous Nevskiy Prospect.

The Nevskiy Prospect is one of the finest streets of the world, not so much for its houses as for its immense width and length, the crowds which overflow its broad sidewalks, and the vehicles which glide over its wooden pavement. It runs for 3,200 yards, with a width of 130 feet, and then with a slow bend toward the S. for another 1,650 yards, to reach again the Neva near the Smolyni convent.

The climate is less severe than might be expected, but it is unhealthy and very changeable on the whole. The average temperatures are 15.4° F. in January, 64° in July, and 38.6° for the year. A short but hot summer is followed by a damp autumn and very changeable winter, severe frosts being followed by rainy days in the midst of winter, and returning in April and May after the first warm days of the spring.

There are many large factories in the surrounding country, but the industrial establishments of the capital itself are chiefly small. Pop. 1,267,023.

Saint-Saens, Charles Camille, a French musician; born in Paris, France, Oct. 9, 1835. At the age, it is said, of two and a half years he was taught the pianoforte by his great-aunt, and at seven he had further instruction from Stamaty, and subsequently learned harmony under Maleden. In 1847 he studied the organ under Benoist. At the age of 16 he wrote his first symphony, which was performed with success, and was followed by numerous other instrumental works. He became organist, first of the church of St. Mery, and in 1858 of the Madeleine, where he continued till 1877. "Samson and Dalila," a sacred drama, was produced at Weimar in 1877, and was subsequently successfully revived at Rouen. His reputation as a composer is high, though he has not attained the highest rank in opera.

Saintsbury, George Edward Bateman, an English litterateur; born in Southampton, England, Oct. 23, 1845; was educated at King College School, and Oxford. Fro 1868 till 1876 he filled scholastic a pointments at Manchester, Guernse and Elgin, but soon after establishe himself in the literary world of Lo don as one of the most active and i fluential critics of his day.

St. Sebastian, a celebrated Roma martyr; born in Narbonne about 25 A captain in the prætorian guar under Diocletian, he used the faci ilties afforded by his station to pro agate the Christian faith and succor its persecuted professors. Ha ing refused to abjure his religion, h was tied to a tree, shot with arrow and left for dead. A Christian wom an, seeking his body by night, foun him still alive, and cared for him ti he was restored; but, having venture to appear before Diocletian to remo strate against his cruelty, he wa beaten to death with clubs, and h body thrown into a sewer, but afte ward recovered and interred. He die in Rome, Jan. 20, 288.

Saint Simon, Claude Henr Count de, a French social philos pher, the founder of French socialism born in Paris, France, in 1760. O the breaking out of the Revolutio bought a considerable quantity of co fiscated land, with the view of estal lishing a large scientific and indu trial school; the scheme was a fai ure. From this time he devoted hin self to what he termed a "physic political" reformation; he marrie and continued to pursue his caree in which good and evil were co founded. This, in 1807, came to a end, and he was compelled to becom a clerk in a government office at small salary. In 1812 he published number of remarkable works whic attracted round him many disciples His last efforts were directed towar the foundation of a new religion which he called the New Christianity in which society was to be reorganized He died in 1825.

St. Stephen, The Deacon, calle also the "protomartyr," or earlies of the Christian martyrs; one of th seven deacons whose appointment i related in the 6th chapter of the Act of the Apostles. The circumstance of his martyrdom are related in th same chapter.

St. Thomas, a volcanic island of Africa belonging to Portugal; in the Gulf of Guinea; 170 miles W. of the mouth of the Gabun river. Its S. extremity almost touches the equator. Measuring 32 miles by 21, it has an area of 360 square miles; pop. nearly 20,000. Chief town, St. Thomas, on the N. E. coast. The island was discovered in 1470, and colonized in 1493 by the Portuguese.

St. Thomas, one of the Virgin Islands, W. I., formerly belonging to Denmark; 36 miles E. of Porto Rico; area, 33 square miles. English is the language of the educated classes. The surface is hilly and the soil poor. The port, Charlotte Amalie or St. Thomas, was formerly a busy emporium for the European trade of the West Indies, the harbor in which the merchant fleets assembled to wait for their convoys, and later the principal port of call in the West Indies. The island is often visited by earthquakes, but they are not, as a rule, so destructive as the cyclones. The United States acquired it by purchase, with the entire Danish West Indies, in 1902.

St. Valentine's Day, the 14th day of February, dear to the hearts of all youth. There is no doubt that the custom of sending valentines can be traced in origin to a practice among the ancient Romans. At the feast of the Lupercalia, which was held on Feb. 15, the names of all the virgin daughters of Rome were put in a box, and drawn therefrom by the young men. Each youth was bound to offer a gift to the maiden who fell to his lot, and to make her his partner during the time of the feast.

St. Valentine was a bishop of Rome during the 3d century. He was successful in converting the pagan Romans to Christianity. For this reason he incurred the displeasure of the Emperor, who hated and persecuted the little Christian band, and he was martyred by order of that ruler, first beaten with clubs and then beheaded. The date of his death was Feb. 14, 270. Archbishop Wheatley says that "St. Valentine was so famous for his love and charity that the custom of choosing valentines on this festival took its rise from thence." When the saint came to be placed in the calendar, his name was given to the day of his death, and this was made a festival.

St. Vincent, one of the British islands in the West Indies, Windward Group, 105 miles W. of Barbadoes; area, 132 square miles; pop. 41,054. The island is traversed from N. to S. by a chain of volcanic mountains, which rise in the volcano called the Souffriere to 3,000 feet. Many of the valleys are fertile, and the shores are rich and productive. The climate is healthy. The chief town is Kingstown at the head of a bay on the S. W. coast. The island is ruled by a governor and a nominated legislative council of eight members; previous to 1877 it had a representative government. St. Vincent was discovered by Columbus in 1498.

Sajou, a lively and active monkey, of South America, docile, but somewhat capricious. It has a prehensile tail, though it is not so delicate an organ of touch as in some other species.

Sajous, Charles Euchariste de' Medici, an American physician; born at sea Dec. 13, 1852; was graduated at Jefferson Medical College in 1878; became dean and professor there, and later accepted the chair of anatomy and physiology in the Medico-Chirurgical College, Wagner Institute of Science.

Sakhalin, a long island in the North Pacific, separated from Manchuria by the Gulf of Tartary, opposite the mouth of the Amoor; area, 24,560 square miles. The center is mountainous. There are three parallel ridges running from N. to S., from 2,000 to 5,000 feet above sea-level. In 1875 the Russians obtained its cession from Japan.

Saki, a monkey, called also fox-tailed monkey, found in South America. These animals usually reside in the outskirts of forests, in small societies of 10 to 12 individuals. On the slightest provocation they display a morose and savage temper; and, like the howlers, they utter loud cries before sunrise and after sunset.

Saki, or **Sake,** the native beer and common stimulating drink of the Japanese. It is made from rice, drunk warm, producing a very speedy but transient intoxication.

Sakuntala, one of the most pleasing female characters of Hindu mythology. She is mentioned as a water nymph in the "Yajurveda"; her name has become especially familiar in the United States and Europe through the celebrated drama of Kalidasa, which became the starting point of Sanskrit philology in Europe.

Sal, one of the most valuable timber trees of India, growing to the height of 100 feet. Extensive forests of it exist in Northern India, where it is largely used in carpentry of all kinds. It yields a resin used to caulk boats and ships, and also for incense.

Sala, George Augustus Henry, an English journalist; born in London, England, in 1828. He acquired a large fortune in journalism, but was recklessly extravagant and finally became bankrupt. He died in Brighton, England, Dec. 8, 1895.

Salaam, the general term of salutation among the Mohammedans.

Saladin, or **Salaheddin,** a celebrated Sultan of Egypt and Syria; born in 1137. He made great conquests in Syria, Arabia, Persia, and Mesopotamia; after which he defeated the Christians with great slaughter near Tiberias. This was followed by the surrender of Jerusalem. In 1189 Richard Cœur-de-Lion, with his ally, Philip Augustus, King of France, laid siege to Acre, which, after a two years' struggle, was taken by them; but a truce was concluded between Saladin and the Christians; soon after which the Sultan died in Damascus in 1192.

Salamanca, a city of Spain; on and between four low hills beside the river Tormes, 110 miles N. W. of Madrid. From the middle of the 13th to the close of the 17th century it was the seat of one of the most celebrated universities in Europe. In the 16th century there were here from 6,000 to 8,000 students; at the present day there are not more than 400. The university buildings date chiefly from the 15th century and are Gothic in style. In Salamanca's palmy days her population reached 50,000, and the university counted more than a score of colleges. The city is still surrounded with walls, pierced by 10 gates, and preserves very much of its mediæval appearance. The river is crossed by a bridge of 27 arches, in part of Roman construction. The great square is the largest perhaps in Spain. It was used for bull fights, and can hold 20,000 spectators. In the Middle Ages Salamanca was famous for its leather work. The town was captured by Hannibal in 222 B. C. The Moors were expelled from its walls in 1055. During the Peninsular war it was taken by the French (1812), and in the vicinity Wellington defeated Marmount on July 22, 1812.

Salamander, a genus of reptiles closely allied to the frog, from which it differs in having an elongated body terminated by a tail, and four feet of equal length. Together with the frog, this genus is included under the order Batracia, and is easily distinguished

GIANT SALAMANDER.

from the lizards by having no nails on the toes, a naked skin destitute of scales, and a heart with a single auricle. Found in North America and Europe.

Salamis, or **Pityoussa** (modern name Koluri), an irregularly shaped, mountainous island of ancient Greece, off the coast of Attica. Its area is

about 30 square miles. It had anciently two principal towns, Old and New Salamis. It is remembered chiefly on account of the great naval battle between the Greeks and Persians, which was fought with great bravery (480 B. C.) a few days after the battle of Thermopylæ, but in which the Persians were entirely defeated.

Sal Ammoniac, known also as chloride of ammonium, and sometimes as hydrochlorate of ammonia.

Salangane, a species of swift resembling swallows, common throughout the Eastern Archipelago, and famous as the producers of the "edible bird's nests."

Salanx, a small whitish fish, known on the coast of China as whitebait.

Salawatty, an island off the W. extremity of New Guinea, to the Dutch portion of which it is regarded as belonging; area about 750 square miles.

Saldanha Oliviera e Daun, Joao Carlos, Duke of, a Portuguese statesman; born Nov. 17, 1790; was educated at Lisbon and entered the army. When the French invaded Portugal he took the patriotic side. From 1817 to 1822 he was in South America and took a leading part in the struggle between Brazil and Montevideo. When Brazil declared herself independent of Portugal, Saldanha returned to Lisbon, and in 1825 was appointed governor of Oporto. He took the part of Dom Pedro against Dom Miguel, finally forcing Miguel to sign the convention of Evora Monte (May 26, 1834) and leave Portugal. During 1836–1846 Saldanha lived partly in exile, partly in retirement. Saldanha returned home in 1846; and from that time down to 1856 was alternately at the head of the government. During the reign of Pedro II. he held no great office of state, and under King Louis was kept abroad as ambassador at Rome and London. He died in London, Nov. 28, 1876.

Sale, in law, that transaction by which the ownership of property is transferred from one person to another in consideration of a money payment made by the buyer to the seller. If it be a commutation of goods for goods, it is more properly an exchange.

Salem, a city, port of entry, and one of the county-seats of Essex co., Mass.; on Massachusetts Bay, 17 miles N. E. of Boston. With the exception of Plymouth, Salem is the oldest settlement in New England, and is noted for its many historical interests. Its first house was erected by Roger Conant in 1626, and two years later John Endicott founded the first permanent settlement. The framework of the first church, built in 1634, is still intact. The witchcraft delusion arose here in 1692, and 19 persons were executed because of it. On Oct. 7, 1774, the Massachusetts House of Representatives with John Hancock in the chair met in Salem and declared the independence of that province. On Feb. 14, 1775, the British, in their search for war munitions, were foiled at the North Bridge and forced to withdraw. During the Revolutionary War over 150 privateers sailed from Salem and captured in all 445 English vessels. In 1785 the first vessel from the United States to India and China left this port.

Salep, a substance obtained from the tuberous roots of several species of orchis, and the finest is obtained from Asia Minor. It occurs in commerce in small oval balls of a whitish-yellow color, of a horny aspect, hard, with a faint peculiar smell, and a somewhat insipid taste.

Salesian Nuns, the nuns of the order of the Visitation of the Virgin Mary, founded by Francis de Sales and his friend Madame de Chantal, one of his disciples, in 1610, at Annecy, in Savoy, as a refuge for widows and sick females. The order is not as numerous as formerly, but is still active in charitable work.

Saleyer, or **Salayer, Islands,** a group of islands in the Indian Ocean; S. of Celebes, from which Great Saleyer is separated by the Saleyer Strait. They are about 30 in number; pop. about 50,000.

Salians, or **Salian Franks,** the name given to that section of the Franks who from the 3d to the middle of the 4th century were settled on the left bank of the Lower Rhine. Their origin is uncertain, but it is known that the earliest Frankish kings were Salian Franks.

Salicaceæ, trees or shrubs, inhabiting woods in the N. districts of America, Europe, and Asia. Only two genera are included in the order, the willow and poplar.

Salic, a term applied to a law established by the Salian Franks, regarding succession to certain lands, which was limited to heirs male, to the exclusion of females.

Salicornia, in botany, marsh samphire; glasswort, a seashore plant of the spinach family, from salt marshes, etc., chiefly in the temperate zones. Known species five or six. Various species furnish soda in large quantities.

Salicylic Acid, a dibasic acid existing ready formed in the flowers of the meadow sweet, and obtained synthetically by the oxidation of saligenin, or by heating sodium phenol to 180° in a stream of carbon anhydride. It has a sweetish-sour taste, is slightly soluble in cold, more so in boiling water, very soluble in alcohol and ether. It is much used as a preservative agent, but is claimed to be injurious to the health.

Salina Formation, a name given in North America to one of the subdivisions of the Silurian system, which appears to be equivalent to the lower portion of the Ludlow rocks of the British series.

Saline Plants, plants which grow on or near the seashore, in the water of the sea or of salt lakes, or on the beds of dried-up lakes, and which are used to supply a salt which is above the average in amount, and which become to a certain extent modified in form and function.

Saline Waters, waters with salts in solution.

Salisburia, the ginkgo, or maidenhair tree, is 60 to 80 feet high, with a straight trunk, a pyramidal head, and fanshaped deciduous leaves, with forked veins.

Salisbury, or **New Sarum,** a cathedral city of England, 84 miles W. S. W. of London. Water originally ran through most of the streets, but the streams were covered over after the visitation of the cholera in 1849. The cathedral, built in 1220, was restored in 1782–1791, and again in 1863. The spire is the highest in England, being 400 feet. There is a curious muniment room over the vestry containing a copy of the Magna Charta of King John, said to be that handed to Longespee, Earl of Salisbury, who was one of his witnesses. The cathedral stands apart from any other building in the midst of a beautiful close of about half a square mile in extent, encircled by a wall, within which stand the bishop's palace, the deanery and canons' houses, and many other picturesque buildings. Blackmore Museum contains one of the finest collections of prehistoric antiquities in England, the collection from America being probably unrivaled anywhere.

Salisbury, Edward Elbridge, an American philologist; born in Boston, Mass., April 6, 1814; was graduated at Yale University in 1832, and then studied theology till 1835, when he went abroad and took a course in Oriental languages. He was Professor of Arabic and Sanskrit at Yale University in 1841–1854. Died 1901.

Salisbury, Robert Arthur Talbot Gascoyne Cecil, 3d Marquis of, an English statesman; born in Hatfield, Herts, England, Feb. 3, 1830; was educated at Eton and Oxford. As Lord Robert Cecil he entered Parliament in 1853; in 1866 he was appointed secretary of state for India. In 1865 he became Lord Cranborne and heir to the marquisate. He retired from the ministry, but on the death of his father in 1868 and his elevation to the House of Lords he returned to his old party associations. He resumed the secretaryship for India in 1874. In 1878 he accompanied Disraeli to the congress at Berlin, and on the death of that statesman became the recognized leader of the Conservative party. He became premier on the fall of the Gladstone government in 1885. Gladstone succeeded again to power in the end of the same year, but in the June following Salisbury again became premier and foreign secretary. In 1892 the majority in Parliament being in favor of a Home Rule bill for Ireland, Salisbury retired from office. In 1895 he was recalled, and he died Aug. 23, 1903.

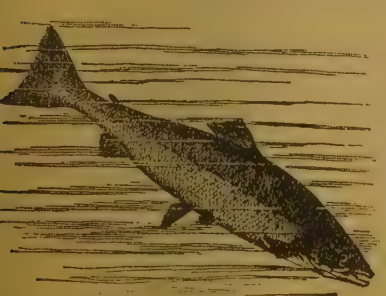
Saliva, the transparent watery fluid secreted by glands connected with

the mouth. The quantity secreted in 24 hours varies; its average amount is probably from 1 to 3 pints. It keeps the mouth in a due condition of moisture, and by mixing with the food during mastication it makes it a soft pulpy mass such as may be easily swallowed.

Salix, the willow. The species found in the United States are numerous, and commonly known as willows, osiers, and sallows. The wood of the flexible branches and twigs is largely employed for basket-work, hoops, etc.

Sallust, Caius Callustius Crispus, a Roman historian; born in Amiternum in 86 B. C. He became tribune in 52 B. C., and in the civil war sided with Cæsar. In 47 B. C. he was prætor elect, and in the following year accompanied Cæsar to the African war, where he was left as governor of Numidia. He returned with immense wealth, and after Cæsar's death lived in luxurious retirement. Sallust wrote several historical works in a clear and concise style. He died in Rome in 34 B. C.

Salmon, a well-known fish, inhabiting both salt and fresh waters, and ranking prominent among the food fishes of the United States and other



SALMON.

countries. It generally attains a length of from three to four feet, and an average weight of from 12 to 30 pounds. In the fall the salmon ascends rivers for the purpose of spawning, and often encounters obstacles. In many streams they are assisted by structures known as "salmon ladders."

Salmon, Daniel Elmer, an American veterinary surgeon; born in Mt. Olive, N. J., July 23, 1850; was graduated at Cornell University in 1872, and at its Veterinary Department in 1876. He accepted a post in the United States Department of Agriculture in 1879; was made chief of the United States Bureau of Animal Industry in 1884; became president of the United States Veterinary Medical Association in 1898; and was for several years dean of the Veterinary Department of Columbian University.

SALMON LADDER.

Salm-Salm, Prince Felix, a German military officer; born in Anholt, Prussia, Dec. 25, 1828. He attained his first rank as an officer in the Prussian army; later entered the Austrian service, but was forced to resign on account of pecuniary difficulties; in 1861 came to the United States and as a volunteer served in the Union army during the Civil War, attaining the brevet rank of Brigadier-General of volunteers. In 1866 he entered the service of Maximilian, the Emperor of Mexico; soon gained the confidence of the emperor, and was made chief of the imperial household and aide-de-camp to his majesty. On the overthrow of the empire he returned to Europe, reëntered the Prussian army as major in the Grenadier Guards; participated in the battle of

Gravelotte in the Franco-Prussian War Aug. 18, 1870, in which he was killed.

Salm-Salm, Princess (Agnes Leclercq), an American heroine; born in Baltimore, Md., Dec. 25, 1840. After winning some reputation as an actress, in 1862 she married Prince Salm-Salm and accompanied him in his campaigns. She was regularly commissioned as a captain in the volunteer service of the United States in recognition of her untiring devotion to the Union cause. After the Civil War in the United States she joined her husband in the City of Mexico, and insisted on accompanying him, armed with a revolver, on a scouting trip to the interior. Separated from him and left behind in the City of Mexico, she had many serious and exciting adventures. At the battle of Gravelotte she was on the field with a corps of army nurses and was thus enabled to reach her husband's side after he was shot; not, however, in time to see him again alive. In 1876 she married Charles Heneage and afterward lived in Bonn. In the spring of 1899 she visited the United States where she was enthusiastically welcomed.

Salome, the mother of James the Elder and John the Evangelist, one of those holy women of Galilee who attended our Saviour in His journeys and ministered to Him.

Salonica (ancient Thessalonica; a large seaport of Turkey in Europe, on a gulf of the Ægean Sea, 315 miles W. S. W. of Constantinople, rising from the sea in the form of an amphitheater, and forming a mixture of squalor and splendor. In Salonica may still be seen vestiges of Cyclopean and Hellenic walls, triumphal arches, and remains of Roman temples, Byzantine structures, and Venetian castles. Its harbor is excellent and its roadstead well sheltered, and next to Constantinople it is the most important city of European Turkey. Thessalonica was founded in 315 B. C., and has had a somewhat eventful history. St. Paul preached the Gospel here, and addressed two of his epistles to the Christian converts of the place. Pop. (1900) est. 150,000.

Salpa, a genus of ascidian or tunicate mollusca found floating in the Mediterranean and the warmer parts of the ocean. They are protected by a transparent gelatinous coat, perforated for the passage of water at both extremities, and are frequently phosphorescent.

Salsette, an island N. of Bombay, British India, with which it is connected by a bridge and a causeway. It is a beautiful island, diversified by mountain and hill, studded with the ruins of Portuguese churches, convents, and villas, and rich in extensive rice fields, cocoanut groves, and palm trees; area, 240 square miles; pop. 111,000; chief town, Thana. Nearly 100 caves and cave-temples exist at Kanhari or Keneri, in the middle of the island, 5 miles W. of Thana. They are excavated in the face of a single hill, and contain elaborate carvings chiefly representations of Buddha, many of colossal size.

Salsify, or **Salsafy,** commonly called oyster plant, cultivated largely in the United States and Europe.

Salsilla, a name of several amaryllidaceous plants producing edible tubers. One species is cultivated in the West Indies, its roots being eaten like the potato. Other species are natives of the Peruvian Andes, and are pretty twining plants with showy flowers.

Salt as a commercial product is a very important industry in the United States. As early as 1620 the Jamestown colonists of Virginia established salt works at Cape Charles. Rock salt is abundant in West Virginia and Louisiana, and salt "licks" and springs are found in nearly all the States and Territories. The springs of Southern Illinois were worked by the French and Indians in 1720. The Kentucky salt springs were known and used before 1790.

Salter, William Mackintire, an American theologian; born in Burlington, Va., Jan. 30, 1853; was graduated at Knox College in 1871, and pursued courses at Yale and Harvard Divinity Schools in 1871–1876 and also studied abroad. He was lecturer of the Society for Ethical Culture of Chicago and also of Philadelphia.

Salt Lake City, a city, capital of the State of Utah, and county-seat of Salt Lake co., 37 miles S. of Ogden. It is built at the base of the Wah

atch Mountains and has an altitude of 4,334 feet above sea-level. The valley in which the city is located is world-famed for its beauty, resources, climate, and health-giving properties.

The city has an area of 51 square miles; 130 miles of streets, of which 3 miles are paved; a system of waterworks, that cost $3,000,000, with 129 miles of mains; and a sewer system covering 27 miles. The streets are lighted by electricity. There is a public school enrollment of over 11,000 pupils; and an annual expenditure for public education of nearly $250,000. The annual cost of maintaining the city government exceeds $742,000. The annual death rate averages 11.90 per 1,000.

The first point of interest in the city is the Great Temple erected of granite at an estimated cost of $5,000,000. It is 200 feet long by 100 feet wide. Among the other great buildings are the tabernacle, built principally of wood, at a cost of $500,000, with the largest roof in the world unsupported by columns, and having a seating capacity of 13,500; the Assembly Hall; Endowment House; the Lardo House, the residence of the president of the Mormon Church; and the Lion and Bee-hive Houses, former residences of Brigham Young. Fort Douglas, a regimental post, is 3 miles from the city.

The city was founded by 143 Mormons under Brigham Young in 1847. Pop. (1900) 53,531.

Salt Lick, a knob lick; a place where salt is found on the surface of the earth, to which wild animals resort to lick it up; sometimes near salt springs.

Salt Marsh, land under pasture grasses or herbage plants, near the sea, and liable to be overflowed by it, or by the waters of estuaries, and in consequence more or less impregnated with salt.

Saltpeter, or Saltpetre, in chemistry, found in dry and hot countries as a natural product, but prepared artificially by exposing a mixture of calcareous soil and animal matter to the atmosphere, or by decomposing native sodium nitrate with potassium carbonate. It is chiefly used in the manufacture of gunpowder, fireworks, and nitric acid.

Salt River, an imaginary river up which defeated candidates for office in the United States are said to row.

Saltus, Edgar Everston, an American novelist; born in New York, June 8, 1858. He was educated in Europe and graduated at the Columbia Law School.

Saltus, Francis Saltus, an American poet, brother of Edgar; born in 1849. He was of the modern school of poets. He died in 1889.

Saltykov, Michail Yevgrafovich, pseudonym N. Sheshedrin, a noted Russian satirist; born Jan. 27, 1826. He died in St. Petersburg, May 12, 1889.

Saltwort, the Salsola, a genus of plants. The species are numerous, mostly natives of salt marshes and sea-shores, widely diffused. It was formerly collected in considerable quantities, to be burned for the sake of the soda which it thus yields.

Salutes, Military, military courtesy requires the junior to salute first or when the salute is introductory to a report made at a military ceremony or formation to the representative of a common superior. When under arms the salute is made with the sword or saber if drawn, otherwise with the hand, and a mounted officer always dismounts before addressing a superior who is not mounted. On official occasions officers, when indoors and under arms, do not uncover, but salute with the sword, if drawn, and otherwise with the hand. If not under arms they uncover and stand at attention, but do not salute except when making or receiving a report.

Salutes With Cannon. Salute to the Union. This is one gun for each State, and is commemorative of the Declaration of Independence. It is fired at noon of the Fourth of July at every military post and on board commissioned naval vessels belonging to the United States. The National Salute, 21 guns. This is the salute for the National flag, the President of the United States, presidents of foreign republics or sovereigns of foreign States visiting the United States. Vice-President of the United States, American and foreign ambassadors, 19 guns. The president of the Senate, speaker of the House of Representa-

tives, members of the cabinet, the chief-justice, a congressional committee, governors within their respective States or Territories, viceroy or governor-general of provinces belonging to foreign States, general of the army, admiral of the navy, and same ranks in foreign armies and navies, 17 guns. American or foreign envoys, or ministers plenipotentiary, assistant Secretaries of Navy or War, lieutenant-general, or a major-general commanding the army, and corresponding ranks in the navy and foreign armies and navies, 15 guns. Ministers-resident accredited to the United States, major-general, rear-admiral, and corresponding ranks of foreign armies and navies, 13 guns. Charges d'affaires, brigadier-general, commodore, and corresponding ranks in foreign armies and navies, 11 guns. Consuls-general accredited to the United States, 9 guns. Salutes are only fired between sunrise and sunset, and not on Sundays, except in international courtesies. The national colors are always displayed at the time of saluting. The salute to the flag is the only salute which is returned, and this must be done within 24 hours.

Salut Public, Comite de (French, Committee of Public Safety), the term applied to a number of members of the National Convention during the Reign of Terror, 1793-1794, who acted as the dictators of France. Robespierre, the real chief, though half concealed from view, Couthon, and St. Just, finally came to be the committee. Among these men there was perfect equanimity down to the moment of their fall. Robespierre, Couthon and St. Just were executed on the 9th Thermidor (July 28, 1794).

Salvador, or **San Salvador,** a republic in Central America; on the coast of the Pacific; area, 7,225 square miles; pop. 651,130, mostly Spanish-speaking Indians and half-breeds. A range of volcanic peaks, varying in height from 4,000 to 9,000 feet, runs through the center of the country, dividing an interior valley from the lowlands, on the coast. The soil is remarkably fertile. Cattle-breeding is carried on, but not extensively. The manufactures are unimportant. The chief exports are coffee, indigo, silver, raw sugar, balsam of Peru, leather, etc. The established religion is Roman Catholicism. The government is carried on by a president and four ministers. There is a congress of 70 deputies elected by universal suffrage. The inhabitants had long the reputation of being the most industrious in Central America, and the State in proportion to its size, is still the most densely peopled. Salvador remained under Spanish rule till 1821 when it asserted its independence and joined the Mexican Confederation. In 1823, however, it seceded from the Confederation and subsequently formed part of the Republic of Central America. In 1853 it became an independent republic.

Salvage, the act of saving a ship or goods from extraordinary danger as from fire, the sea, an enemy, pirates, or the like.

Salvation Army. The Salvation Army was founded in 1865 by William and Catherine Booth under the name of the Christian Mission. In 1878 it changed its name to the Salvation Army. It was established for the purpose of reaching with the Gospel the large percentage of the working classes who attend no place of worship. In 1880 Commissioner George Scott Railton landed in New York with a small party of officers. The present position of the work in America is as follows:

Officers and employees	3,190
Corps and institutions	900
Institutions for the poor	200
Nightly accommodation for the poor	9,560
Expended annually in poor reliefs.	$800,000

In 1890 General Booth published his book "In Darkest England and the Way Out," laying down principles and plans for the solution of the great problem of pauperism. This led to a rapid development of the Salvation Army along sociological lines, in addition to its purely religious propaganda. The work of the Salvation Army in America may be divided into the following departments:

Its Religious Work.— Seven hundred and three corps and outposts conduct about 12,000 open-air and indoor meetings weekly, with audiences numbering more than 2,000,000 persons each week. The average number of annual conversions recorded is about 50,000.

Its Temperance Work.—Every member is a total abstainer, thousands of drunkards are converted annually and the lowest saloons are constantly visited.

Work Among Foreigners.—Forty-three Scandinavian, 13 German, 1 Italian and 2 Chinese posts have been established, where work is carried on in the language of these nationalities.

Farm colonies have been established in Colorado, California, and Ohio, where worthy but poor families can become home-owners. Four hundred persons have been settled on 3,000 acres of land. The money is loaned to the colonists and repaid by them in easy instalments.

Workingmen's Hotels.—Eighty-one workingmen's hotels, accommodating more than 7,000 persons, have been organized in the large cities. For from 5 to 25 cents a night a workingman can get a clean bed, bath and good moral surroundings.

Industrial Homes for the Unemployed.—For the man without money 53 Industrial Homes, Wood-yards and Second-hand Stores have been established, where employment is given in collecting, sorting and selling the material.

Homes and Hotels for Women.—Homes and Hotels for Women have also been established in the principal cities. Employment is found for the inmates by means of laundries, needlework, book-bindery, etc.

Children's Homes.—About 650 children are daily cared for in Orphanages, Day Nurseries and other institutions.

Twenty "Slum Settlements" have been established in the poorest tenement districts of the largest cities.

Labor Bureaus.—About 50,000 workless persons are annually found employment through the Labor Bureau and Social Relief Institutions.

The following operations are also carried on: Two Sailors' Homes, Fresh Air Camps and Summer Outings, Cheap Coal and Penny Ice, Winter Relief and Cheap Clothing; 3 Probationary Women Police Officers appointed by the Courts; Poor Man's Lawyer; Inquiry Bureau for Missing Friends; 300,000 free Christmas and Thanksgiving Dinners.

FREDERICK BOOTH TUCKER.

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Salvini, Tommaso, an Italian tragedian; born in Milan, Jan. 1, 1830. His father and mother were both actors. In 1849 he fought with distinction in the Revolutionary War. He scored successes in Brussels and Madrid, and visited the United States in 1874, England in 1875, but after another visit to the United States in 1881, and to Great Britain in 1884, he retired from the stage to enjoy a life of leisure in his villa near Florence.

Salvinia, a genus of the order of plants formerly called pepperworts, now known as the heterosporous ferns.

Salzburg, a city of Austria, capital of the duchy of Salzburg, situated on both banks of the rapid Salza, 63 miles S. E. of Munich. The principal edifices are the cathedral (1614–1628) built in imitation of St. Peter's, Rome; the archbishop's palace, imperial palace, exchange, museum, and several benevolent institutions. It was the birthplace of Mozart. The manufactures are varied, but not of importance. The Bishops of Salzburg were princes of the German empire, and held the position of sovereigns over the archbishopric till it was secularized in 1802. Pop. 27,741. The duchy or crown-land of Salzburg, area 2,767 square miles, is a rugged mountainous country, intersected by numerous valleys, but in many of them much corn and fruit are raised. Wood is abundant, and the minerals include gold, silver, lead, copper, cobalt, iron, salt, and marble.

Samar, the third largest of the Philippine Islands; S. E. of the E. part of the island of Luzon, from which it is separated by the Strait of San Bernardino; and the extreme E. of the Visaya group. On the S. W. it is separated from the island of Leyte by the Strait of San Juanico. The W. coast is bounded by the Western Sea, and the E. coast by the Pacific Ocean. The island is mainly mountainous, although there are many fine valleys under cultivation. Samar extends 156 miles from N. W. to S. E., 75 miles from the E. to W., and has an area with adjacent islands of 5,488 square miles; pop. 185,386. There are many fine kinds of wood, numerous varieties of wild fruits, various kinds of bamboo, roots suitable for food, rattan,

game, and fish. Besides cocoanuts there is a large production of oil, rice, and hemp. On Sept. 28, 1901, a large body of insurgents surprised Co. C, 9th United States Infantry, while its members were at breakfast, and killed 48. The remaining 24 members, of whom 11 were wounded, escaped to Basey. On receiving the news of this massacre, General Hughes immediately organized a force to pursue the insurgents. On Nov. 7, 1901, the command of Maj. L. W. T. Waller captured the rebel stronghold at Sojoton.

Samara, a town of Russia, capital of the province of same name; 550 miles E. S. E. of Moscow, at the confluence of the Samara with the Volga. Pop. 91,672. The province lies on the left bank of the Volga, and has an area of 58,321 square miles. A great part is flat and fertile, but is little cultivated. Wheat and other kinds of grain are the chief products. In 1899 Samara was afflicted with a great plague and famine. The Russian Red Cross Society was compelled to provide food for 100,000 men, women and children. Pop. 2,763,478.

Samaria, a city and country of Palestine; situated toward the N. of Judea. Samaria was the country in which the 10 revolted tribes raised their independent state and formed the kingdom properly denominated Israel, in contradistinction to that of Judah, embracing the two tribes of Judah and Benjamin, from which the other 10 had seceded when, refusing the authority of Rehoboam, they established a dynasty of their own, at the head of which they placed Jeroboam, the first king of the nation of Israel. So deadly was the animosity that existed between these two nations of Jews, that, from the time of their severance to the destruction of their capital and the captivity of Israel, an almost perpetual state of warfare existed between Judah and Israel; the term of Samaritan was one of the bitterest contempt and reproach that could be applied to any one. The city of Samaria, and capital of the kingdom, was situated on a hill, Mount Sameron, was founded by Omri, and from that time till its overthrow by the Assyrians was the residence of all the Kings of Israel. It was subsequently rebuilt by Herod, who called it Sebaste (a Greek word signifying Augustus), in honor of Augustus Cæsar.

Samaritan Pentateuch, a recension of the Hebrew text of the Pentateuch, in use with the Samaritans, and accepted by them as canonical to the exclusion of the other Old Testament writings. Early in the 17th century the famous traveler Pietro della Valle succeeded after much inquiry in procuring at Damascus a copy not only of the original of this Pentateuch of the Samaritans, but also of the ancient translation, or Targum, in the Samaritan dialect; both documents passed in 1623 into the hands of the Oratorians in Paris. Through Ussher and others a number of additional Samaritan codices were brought to Europe in the course of the 17th century, so that Kennicott was able to use for his Hebrew Bible 16 MSS. more or less complete. Of the MSS. that have reached Europe none are older than the 10th century. All are written in a peculiar modification of the old Semitic character which is now known to have been at one time common to the entire Semitic domain, and also to have constituted the basis of the Greek alphabet.

Samaritan Societies, organizations founded for the purpose of rendering prompt aid to the injured. The object had a rapid and widespread recognition, and in September, 1893, the first international convention of the societies was held in Vienna.

Samaritans, a mixed people, which inhabited the region between Judea and Galilee, and formed a sect among the Jews. On the return of the Jews from captivity they declined to mix with the Samaritans, though united with them in religion. The latter attempted to prevent the Jews from building the temple at Jerusalem, and, failing in this, built a temple on Mount Gerizim exclusively for their own worship. A few of the race still exist scattered in Egypt, at Damascus, and at Gaza.

Sambuke, an ancient musical instrument; though applied sometimes to several musical instruments of different kinds, such as a lyre, a dulcimer, a triangular harp or trigon, and a large Asiatic harp.

Samoan Islands, a group in the South Pacific Ocean, formerly known as the Navigator Islands. They are located about 2,000 miles S. and 300 miles W. of the Hawaiian Islands and 14° S. of the equator. They lie in an almost direct line between San Francisco and Australia and slightly S. of the direct steamship line connecting the Philippines with the proposed Panama or Nicaraguan interoceanic canals. Their especial importance lies more in their position as coaling and repair stations on these great highways of commerce rather than in their direct commerical value. The group consists of 10 inhabited and 2 uninhabited islands, with an area of 1,700 square miles and an aggregate population, according to the latest estimates, of 36,000. The bulk of the population is located in the three islands of Upolou, Savaii, and Tutuila. The islands are of volcanic origin, but fertile, producing cocoanuts, cotton, sugar, and coffee, the most important, however, being cocoanuts.

The government of the Samoan Islands had been from time immemorial under the two royal houses of Malietoa and Tupea, except on the island of Tutuila, which was governed by native chiefs. In 1873, at the suggestion of foreign residents, a house of nobles and a house of representatives were established, with Malietoa, Laupepa, and the chief of the royal house of Tupea as joint kings. Subsequently Malietoa became sole king. In 1887 he was deposed by the German government on the claim of unjust treatment of German subjects, who formed the bulk of foreign population on the island, and was deported first to German New Guinea and then to the Cameruns, in Africa, and finally in 1888 to Hamburg, Tamasese, a native chief, being meantime proclaimed by the Germans as king, though against the protest of the British and American consuls at Samoa. Mataafa, a near relative of Malietoa, made war upon Tamasese and succeeded to the kingship.

In 1889 a conference between the representatives of the American, British, and German governments was held at Berlin, at which a treaty was signed by the three powers guaranteeing the neutrality of the islands, in which the citizens of the three signatory powers would have equal rights of residence, trade, and personal protection. By treaty of 1899 the islands were divided between the United States and Germany, the United States getting the important island of Tutuila, and the lesser islands of Ofu and Tau. Pago Pago has been made a coaling station, and the seat of American government for the islands.

Samos, now **Samo,** an island in the Grecian Archipelago near the coast of Asia Minor; 45 miles S. W. of Smyrna, forming a principality tributary to Turkey; area, 180 square miles. It has a mountainous surface, partly covered with pine forests; several fertile and well-watered valleys; produces corn, fruit, and excellent wine; and has several valuable minerals, including argentiferous lead, iron, and marble. The principal town is Vathe, with a good harbor on the N. E. side of the island. Samos was inhabited in antiquity by Ionian Greeks, and had an important position among the Greek communities as early as the 7th century B. C. In 84 B. C. it was united with the Roman province of Asia. In 1550 it was conquered by the Turks. Pop. 52,820.

Samothrace, or **Samothraki,** an island in the N. of the Ægean Sea, belonging to Turkey, about 14 miles long by 8 miles broad. It has a very mountainous surface, one of its summits exceeding 5,000 feet. The island is of interest as being in antiquity the chief seat of the worship of the Cabiri, and celebrated for its religious mysteries. It is interesting also as being visited by St. Paul in the course of his second missionary journey.

Sampey, John Richard, an American theologian; born in Fort Deposit, Ala., Sept. 27, 1863; was graduated at Harvard University in 1882 and at the Southern Baptist Theological Seminary in 1885; was an instructor in the latter in 1885–1892; then was made Professor of Old Testament Interpretation there.

Samphire, an umbelliferous plant, very succulent, pale green; grows wild along the sea coast, and where it abounds it is used as a pickle, an ingredient in salads, or a potherb.

Sample, Robert Fleming, an American clergyman; born in Corning, N. Y., Oct. 19, 1829; was graduated at Jefferson College in 1849; was pastor in Bedford, Pa., in 1856–1866, and in Minneapolis, Minn., in 1868–1887. Subsequently he became Professor of Christian Ethics at Lincoln University. He was several times moderator of the Presbyterian General Assembly of the United States. He wrote a number of religious works.

Sampson, Deborah, an American heroine; born in Plymouth, Mass., Dec. 17, 1760. She served in the Continental Army during the Revolutionary War, in the disguise of a man, under the name of Robert Shurtleff, and greatly distinguished herself for bravery. In 1797 she published "The Female Review," in which she related her experiences in the army. She died in Sharon, Mass., April 29, 1827.

Sampson, William Thomas, an American naval officer; born in Palmyra, N. Y., Feb. 9, 1840. He attended the public schools of his native town, and in 1857 entered the United States Naval Academy, from which he was graduated in 1860, and was assigned to duty on the frigate "Potomac." On July 16, 1862, he was promoted lieutenant. In 1864 he was appointed executive officer of the ironclad "Patapsco," of the South Atlantic Blockading Squadron, and which was blown up in Charleston harbor Jan. 15, 1865, while he was on board. After serving on the frigate "Colorado," of the European squadron, he was promoted to lieutenant-commander July 25, 1866; commander Aug. 9, 1874; and captain, March 26, 1889. Subsequently he was superintendent of the United States Naval Academy; a member of the International Prime Meridian and Time Conference; superintendent of the Torpedo Station; member of a board on fortifications and other defenses; chief of the Bureau of Naval Ordnance; superintendent of the Naval Observatory; a delegate from the United States to the International Maritime Conference in Washington; and president of the Board of Inquiry on the "Maine" disaster. On March 24, 1898, he was appointed commander of the North Atlantic squadron, succeeding Rear-Admiral Sicard, with the rank of rear-admiral. On June 1 he joined Commodore Winfield S. Schley, commander of the "Flying Squadron," off Santiago de Cuba, and took command of the combined squadrons, which included 16 warships. Admiral Sampson was promoted to rear-admiral on Aug. 12, 1898; appointed commander of the Boston navy yard on Oct. 14, 1899; and was relieved of this command, owing to ill health, Oct. 1, 1901. On Feb. 9, 1902, was retired on reaching the age limit. He died May 6, 1902.

Samson, in Scripture, the son of Manoah, of the tribe of Dan. He was endowed with extraordinary strength and obtained several advantages over the Philistines. At length his mistress betrayed him into the hands of his enemies, who put out his eyes, and made him work at a mill. On a public festival when the Philistine lords were assembled in the temple of Dagon, Samson was summoned to show them sport. Laying hold of two pillars of the temple as if to support himself, he pulled down the building and was buried in the ruins, with more than 3,000 Philistines.

Samuel, in Scripture, a prophet and judge of Israel, of the tribe of Levi, was called in his youth, while attending Eli, the high priest. He anointed Saul King of Israel and was afterward commanded to anoint David. After governing Israel either alone or in conjunction with Saul during 50 years, he died in the 90th year of his age, 1072 B. C.

Books of Samuel, two of the ceremonial books of the Old Testament, called after the prophet Samuel, their reputed author. They were anciently reckoned as one book by the Jews. Portions of them are quoted or referred to in the New Testament, and allusions to them also occur in the Book of Psalms, to which they often furnish historical illustration.

Sanborn, Alvan Francis, an American journalist; born in Marlboro, Mass., July 8, 1866; was graduated at Amherst College in 1887, and then studied in the School of Political Science at Columbia University; was engaged in editorial work; became the Paris correspondent of the Boston "Transcript" in 1899.

Sanborn, Franklin Benjamin, an American journalist; born in Hampton Falls, N. H., Dec. 15, 1831; was graduated at Harvard University in 1855 and early turned his attention to journalism. He was editor of the Boston "Commonwealth," the Springfield "Republican" and the "Journal of Social Science."

Sanborn, John Benjamin, an American military officer; born in Epsom, N. H., Dec. 5, 1857; was educated at Dartmouth College; studied law, and was admitted to the bar in 1854. In the Civil War he served first as organizer of Minnesota troops and later took part in the battles of Iuka, Corinth, Port Gibson, Raymond and Vicksburg. In 1864 he took command of the District of Southwest Missouri, and in 1865 fought against the Indians of the Southwest. He was appointed to settle the Indian difficulties in 1866, and was a member of the Indian Peace Commission in 1867-1868.

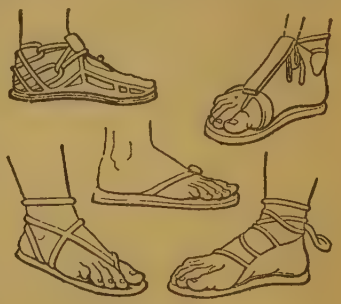
Sanborn, Katharine Abbott, an American miscellaneous writer and lecturer; born in Hanover, N. H., July 11, 1839. She was Professor of English Literature in Smith College for several years, and resigned in 1886.

Sanctification, a term applied in Scripture, as well as in theology, to denote the process by which the effaced image of God in man is restored, and the sinner becomes a saint.

Sanctuary, among the ancient Jews the innermost chamber of the tabernacle — afterward of the temple, in which was kept the ark of the Covenant, and was never entered, except by the high priest once a year. It was also called the Holy of Holies.

Sand, comminuted fragments of igneous, metamorphic, or volcanic rocks, or of chert, flint, etc. They are detached from the parent rock, and as bowlders and pebbles are ground against each other by water on sea-beaches or in any similar way. The colors of sand correspond to those of the minerals in the rocks from which they were detached. In the plural, tracts of land consisting of sand, as the deserts of Arabia or Africa; also, tracts of sand left exposed by the ebb of the tide.

Sand, Musical, sand which, under certain conditions, gives out a musical sound. The phenomenon occurs on sea-beaches in many localities in different parts of the world. The most striking is in the district of Mana, on the S. coast of Kauai, Hawaii. Owing to a fancied resemblance of the sound emitted by the sand in that locality to a dog's bark, the Kauai musical sand is known as "barking" sand.



SANDALS.

Sand, George, best known name of Madame Armantine Lucile Aurore Dupin Dudevant, one of the greatest of French novelists; born in Paris, July 5, 1804. She was the daughter of Maurice Dupin, an officer of the republican army. Till the age of 14 she was brought up at the Chateau of Nohant, near La Chatre, mostly under the care of her grandmother, afterward spending nearly three years in an Augustinian convent in Paris. In 1822 she married Baron Dudevant, to whom she bore a son and a daughter; but in 1831 separated from him, and took up her residence in Paris. In conjunction with Jules Sandeau, a young lawyer, she wrote "Rose and White," which was published in 1831, with the pseudonym Jules Sand. The reception it met with afforded her an opportunity of publishing a novel solely by herself — "Indiana," under the name of George Sand, which she ever after retained. In 1836 she obtained a judicial separation from her husband, with the care of her children. She took an active interest in the revolution of 1848, and contributed considerably to newspaper and oth-

er political literature. In 1854 she published "Story of My Life," a psychological autobiography. Her published works consist of upward of 60 separate novels, a large number of plays, and numerous articles in literary journals. She died in Nohart, June 8, 1876.

Sandal, a protection for the foot, worn in ancient times. It was usually a sole of hide, leather, or wood, bound on the foot by thongs. It was undoubtedly the custom to take off the sandals on holy ground, in the act of worship, and in the presence of a superior. This is still the well-known custom of the East — an Oriental taking off his shoe in cases in which a European would remove his hat.

Sandal Wood, a small, greatly branched, evergreen tree, with leaves opposite and entire. The flowers are at first yellowish, but afterward of a deep ferruginous hue. Though they are inodorous, the wood when cut, especially near the root, is highly fragrant. It grows in the dry region of Southern India, and in the islands of the Indian Archipelago. When felled the trunk is about nine inches or a foot in diameter. It is then barked, cut into billets, and buried in a dry place for about two months. It is largely exported from India to China and Arabia, and, to a certain extent, to Europe. The heart wood is used in the East for carving, for incense, and for perfume. The seeds yield by expression a thick viscid oil.

Sandal-wood Island, or **Jeendana,** a large island in the Indian Archipelago, belonging to the Dutch residency of Timor, crossed by the meridian of 120° E.; area, 4,966 square miles; with a population of about 1,000,000. The coast is bold, and terminates at the S. extremity in a lofty and inaccessible peninsula. The interior is mountainous. Edible birds' nests, bees'-wax, and sandal wood are obtained here.

Sanday, one of the Orkneys, an island of very irregular shape, generally with a very flat surface and a light sandy soil; greatest length, 13 miles. There is another small island of the same name in the Inner Hebrides, connected with Canna at low water, 4 miles N. W. of Rum.

Sand Blast, one of the most wonderful uses of sand, by means of which glass, stone, metals, or any other hard substance may be cut or engraved. If a stream of sharp sand be let fall from a high box (as high as the ceiling of a room) through a tube on to a plate of glass held under it, the sand will cut away little grains of the glass till at length the whole surface will be cut or scratched and it will look like

SAND BLAST APPARATUS.

ground glass. If, instead of cutting the glass all over, it is wanted to engrave a pattern or figure on it, the workman has only to cover the parts of the glass which he does not want cut with a stencil plate made of leather, rubber, paper, wax, etc., for the sand will not cut any soft substance. Metals and stones also may be cut by means of the sand blast, which will

not only scratch the surface, but will cut it away to any depth. The marble tombstones put up in the National cemeteries to the memory of soldiers killed in the war were made in this way. Iron letters were fastened on to the smooth face of the stone, which was then put under the sand blast, and the sand cut away all the marble not covered by the letters. When the iron patterns were taken off, the letters were left raised as if they had been cut out with the chisel. The work was done so fast that 300 headstones were made in a day, or as many as 300 men could have done in the same time, working with the hammer and chisel.

Sand Crab, or **Racing Crab,** a genus of crabs which live in holes in the sand along the sea shores of warm countries.

Sand Eel, in ichthyology, a popular name for the genus Ammodytes. They live in shoals, and are much sought after by fishermen, who discover their presence on the surface by watching the porpoises which feed on them.

Sandemanians, in Church history, the followers of Robert Sandeman, who in the latter part of the 18th century introduced into England and America the doctrine of the Glassites. The body is not numerous.

Sander, a species of fishes belonging to the perch family, and found in fresh-water rivers and streams in Germany and the E. of Europe generally. It is known under the name of pike perch.

Sanders, Frank Knight, an American theologian; born in Batticotta, Ceylon, June 5, 1861; was graduated at Ripon College, Wis., in 1882; studied Semitic languages and Biblical literature at Yale University in 1886–1889; was instructor at Jaffna College, Ceylon, in 1882–1886, and Professor of Biblical Literature at Yale University in 1893–1901. In the latter year he was made Professor of Biblical History and Archæology and dean at the Yale Divinity School.

Sanderling, a small gray sand-piper common on sandy beaches in America, Europe, and Asia.

Sand Flies, the name of certain flies found in various countries, the bite of which may give rise to painful swellings.

Sand Grouse, called also rock pigeons. They are preëminently desert birds, and are found in great numbers in the most arid situations and on the most open and barren plains. Their food consists of hard seed and insects.

Sandison, George Henry, journalist and editor; born 1850. In 1871 edited "Times," of Albany, State capital of New York, also connected with various leading newspapers in editorial capacities, and as correspondent, etc. In 1881 conducted successful crusade for State prison reform, resulting in passage of laws in New York State which were afterward followed by similar legislation in 10 other States. Author of many short stories and contributor to various magazines during the last 30 years. In 1890 became associate editor of the "Christian Herald." Prominently connected with that journal's relief work in Armenia, Cuba, Russia, China, India, Finland, and other lands.

Sand Lizard, a common European lizard, about seven inches long, of which the tail is four. Usual color,

SAND LIZARD.

sandy-brown, with obscure longitudinal bands of a darker hue, line of round black spots on side. The female lays 12 to 14 eggs in the sand, covers them, and leaves them to be hatched by solar heat.

Sand Martin, called also the bank martin and bank swallow. It makes its nest in the steep banks of rivers, sand pits, quarries, and sea banks, and deposits four or five white eggs. It breeds in N. latitudes, but goes S. in autumn, returning again in spring.

Sand Mole, a rodent from the Cape of Good Hope. It is about the size of a wild rabbit, with light grayish-brown fur, rather variable in tint in different individuals. The eyes are very small; external ears wanting; tail short.

Sandpiper, a popular name for several wading birds.

FIGHTING SANDPIPER.

Sandringham, a Norfolk estate, 3 miles from the sea and 7½ miles N. N. E. of Lynn, England, comprising over 7,000 acres; was purchased in 1862 by King Edward, then Prince of Wales. The existing mansion was demolished, and the present hall built. Sandringham was the scene of the death of the eldest son of King Edward, the Duke of Clarence (Jan. 14, 1892).

Sands, Benjamin Franklin, an American naval officer; born in Baltimore, Md., Feb. 11, 1811; entered the navy in 1828 as midshipman; was commissioned lieutenant in 1840; served in the Mexican War; commissioned captain, 1862; and served with gallantry throughout the Civil War; appointed superintendent of the Naval Observatory, 1867–1873; commissioned rear-admiral, 1871; and retired, 1874. He died in Washington, D. C., June 30, 1883.

Sands, Henry Berton, an American surgeon; born in New York city, Sept. 27, 1830. He was associated with Willard Parker from 1860 to 1870; was Demonstrator of Anatomy in the College of Physicians and Surgeons, New York, 1856–1866; Professor of Anatomy, 1869–1870, and from 1870 to his death held the chair of surgery. He died in New York city, Nov. 18, 1888.

Sands, James Hoban, an American naval officer; born in Washington, D. C., July 12, 1845; was graduated at the United States Naval Academy in 1863; served in the Civil War with the North Atlantic blockading squadron; was present at the evacuation of Charleston and at the attacks on Fort Fisher. He was assigned to the Indian squadron in 1865, and participated in the skirmish with the savages on the Island of Formosa. In the Spanish-American War in 1898, he served in the North Atlantic patrol squadron; was off Santiago at the time of the surrender of the Spanish army; and joined the expedition to Porto Rico. After the war he became governor of the United States Naval Home in Philadelphia, Pa.

Sands, Robert Charles, an American author; born in Flatbush, Long Island, N. Y., May 11, 1799; in 1824 edited the "Atlantic Magazine," and from 1825 to 1827, with Bryant, the New York "Review"; and from 1827 till his death was on the staff of the "Commercial Advertiser." He also published the "Life and Correspondence of Paul Jones." He died in Hoboken, N. J., Dec. 17, 1832.

Sand Star, Ophiura, a genus of star-fishes. In the sand stars the arms or rays are mere appendages to the body, and not definite parts, and the viscera or organs of the body do not extend into the rays, but are confined to the central body piece or "disk."

Sandstone, any stone which is an agglutination of grains of sand, whether calcareous, siliceous, or of any other mineral nature. They vary in compactness from scarcely cemented sand to a hardness approaching that of quartz rock.

Sand Wasp, the common name of a family of fossorial hymenopterous insects, which dig burrows in the sand.

Sandwich (so called after John Montagu, 4th Earl of Sandwich, England, who used to have sandwiches brought to him at the gaming table, to enable him to play without stopping), two thin slices of bread, with a slice of meat between them.

Sandy Hook, a low beach at the mouth of New York harbor, about 5 miles long, and varying in width from a few hundred feet to ¾ of a mile. There is a beacon light at the very extreme point, but the Sandy Hook lighthouse is ¾ of a mile to the S. The National government has recently established Fort Hancock here.

Sanfoin, a forage plant; native of Europe; a legume which has the property of binding light, dry, sandy, and chalky soils by its roots. It has been tried from time to time in the United States, but has not met with favor in any locality. In the N. the winter kills it, as it does in the W. In the Middle States it can not compete with clover, and in the S. it is reported to be feeble in growth.

Sanford, Edward, an American author; born in Albany, N. Y., July 8, 1805. Many of his verses have been published in various collections. He died in Gowanda, N. Y., Aug. 28, 1876.

Sanford, Henry Shelton, an American diplomatist; born in Woodbury, Conn., June 15, 1823; was educated at Trinity College, Hartford, Conn., and at the University of Heidelberg; was secretary of the United States legation in Paris in 1849–1853 and United States minister to Belgium in 1861–1869. In 1877 he took part in the founding of the Independent State of the Kongo, and in 1884, received recognition of its independence by the United States government. He also represented the United States at the Berlin Kongo Conference of 1885–1886, which granted free trade and neutrality to a population of 50,000,000 people, inhabiting 1,000,000 square miles of territory. Mr. Sanford established the city of Sanford, Fla., in 1870. He introduced into that State the culture of the lemon besides that of several other fruits. He died in Heating Springs, Va., May 21, 1891.

San Francisco, the most important city of California, and the principal emporium of the Pacific Coast of America; on San Francisco Bay; 86 miles by rail S. W. of Sacramento. The bay, which is 50 miles long by 5 miles wide, makes one of the grandest harbors in the world, and the principal one on the Pacific Coast. The mean altitude is 130 feet above the sea; area, 46 square miles; pop. (1900) 342,782.

The city is served by an extensive waterworks system. The reservoirs have a storage capacity of 100,000,000 gallons, and the consumption averages 30,000,000 gallons per day. There are in all 750 miles of streets, of which 192 miles are paved. The sewer system covers 308 miles. The streets are lighted by gas and electricity. The annual death rate averages 18.82 per 1,000. The annual cost of maintaining the city government exceeds $5,700,000.

The Golden Gate Park, named after the popular name of the entrance to San Francisco Bay, is the most important park in the city, comprising 1,043 acres. It extends from the city to the ocean. About half of it is beautifully laid out in promenades, drives, lawns, etc. It was here that the Midwinter Exposition was held in 1894. The park contains a magnificent conservatory, and monuments of Francis Scott Key, author of "The Star-Spangled Banner," President Garfield, General Halleck, and Thomas Starr King. Hill Park, lying a half mile E. of Golden Gate Park, affords a fine view from its highest point, which is 570 feet above the sea. The Presidio, or Government Military Reservation, extends along the Golden Gate for about 4 miles, and has an area of 1,500 acres.

The principal public buildings are the city hall; the United States Branch Mint; the United States government building; United States Appraiser's Building; the Merchant's Exchange; the Palace Hotel; the First National Bank; the Flood Building; Mercantile Library, containing 78,500 volumes; Odd Fellows' Hall; the Mechanics' Institute, containing 82,000 volumes; the California Market; California Academy of Sciences; Crocker Building, and many others, including magnificent churches, office buildings, and banks.

The Federal census of 1900 reported 4,002 manufacturing establishments, employing $80,103,367 capital and 41,978 persons; paying $79,492,952 for stock used and $22,037,527 for wages; and yielding products of an aggregate value of $133,069,416.

San Francisco has an immense foreign trade, chiefly with the Hawaiian Islands, Central America, Japan, China, and Great Britain. In the fiscal year ending June 30, 1901, the imports of merchandise aggregated in value $35,163,903; and the exports $34,596,792. The movement in gold and silver reported for the San Francisco custom district was: Imports, $778,941; exports, $7,927,900.

At the close of the school year 1898–1899 the children of school age aggregated 76,236; the enrollment in the public day schools was 42,612, and in the private and parochial schools (largely estimated) 9,910; and the average daily attendance in public day schools was 34,671. There were 981 teachers; 78 buildings used for school purposes; and public school property of an estimated value of $5,620,200. The institutions for higher education are the Law, Dental, and Medical Departments of the University of California; St. Ignatius College; the Cooper Medical College; the James Lick School of Mechanic Arts; Pacific Theological Seminary; the Hopkins Institute of Art; Irving Institute; Sacred Heart College; and near the city at Palo Alto, the Leland Stanford, Jr., University, and at Berkeley, across the bay, the University of California.

As early as 1769 a number of Franciscan fathers established a mission here, and seven years later the Spaniards chose the place for a military post. In 1835 an Englishman erected the first tent on the site of the present city, in Yerba Buena, 3 miles from the mission. A village which soon grew up was united with the mission in 1846. Two years later gold was discovered and by 1850 San Francisco had a population of 25,000. During the latter year a city charter was received, and in 1856 the county and city were consolidated. In 1851–1856 a vigilance committee was organized by the law-abiding citizens who dealt severely wth criminals and succeeded in establishing good government. In 1897, after four ineffectual attempts, a city charter was adopted by the people.

San Francisco, The, a twin-screw, steel, protected cruiser of the United States navy.

Sanger, William Carey, an American statesman; born in Brooklyn, N. Y., May 21, 1853; was graduated at Harvard University in 1874, and at the Columbia University Law School in 1879; was lieutenant-colonel of the 203d United States volunteers in the Spanish-American War; and was appointed assistant Secretary of War, March 14, 1901.

Sangir Islands, a group of small islands in the Indian Archipelago, between the N. E. extremity of Celebes and the Philippine isle of Mindanao. Most of them are inhabited and are covered with cocoa palms. Rice, pisang, and sago are cultivated. The islands are all mountainous and partly volcanic. The natives are of the Malay race and profess Christianity. Pop. about 50,000.

Sangrealis, Sangreal, or **Saint Grail,** the Holy Cup or Grail, said to be from Modern Latin gradale, a cup; but supposed by some to be a corruption of the Old French le Sang Real, i. e., the true blood of Christ. This sacred relic, preserved in an emerald cup, is said in legendary history to have been brought to England by Joseph of Arimathea. According to the romantic story of King Arthur it could only be discovered by one possessed of perfect virtue; and the "Quest of the St. Grail" by the Knights of the Round Table, of whom the perfect champion, Sir Galahad (in other legends Perceval) was favored by its discovery, is narrated therein at great length.

Sangster, Margaret Elizabeth (Munson), an American poet; born in New Rochelle, N. Y., Feb. 22, 1838. She is editorially connected with "Hearth and Home" and "The Christian Herald"; and in 1889 became editor of "Harper's Bazar." Her writings are most graceful and simple in style, and are very popular.

Sanguinaria, a genus of plants, of the poppy family. The most interesting species is the puccoon, a native

of North America, often called bloodroot, from its containing a red juice.

Sanhedrim, or **Sanhedrin,** the supreme national tribunal of the Jews, established at the time of the Maccabees. It consisted of 71 members, and was presided over by the Nasi ("prince"), at whose side stood the Ab-Beth-Din ("father of the tribunal"). It members belonged to the different classes of society; there were priests, elders, scribes, and others exalted by eminent learning. The presidentship was conferred on the high-priest in preference, if he happened to possess the requisite qualities of eminence; otherwise, "he who excels all others in wisdom" was appointed, irrespective of his station. The limits of its jurisdiction are not known with certainty; but there is no doubt that the supreme decision over life and death, the ordeal of a suspected wife, and the like criminal matters were exclusively in its hands. Besides this, however, the regulation of the sacred times and seasons, and many matters connected with the religious ceremonies in general, except the sacerdotal part, which was regulated by a special court of priests, were vested in it.

By degrees the whole internal administration of the commonwealth was vested in this body, and it became necessary to establish minor courts, similarly composed, all over the country, and Jerusalem itself. Thus we hear of two inferior tribunals at Jerusalem, each of them consisting of 23 men, and others consisting of three men only. These courts of 23 men, as well as those of the three men, probably represent only smaller or larger committees chosen from the general body. Two scribes were always present, one registering the condemnatory, the other the exculpatory votes. The mode of procedure was exceedingly complicated; and such was the caution of the court, especially in matters of life and death, that capital punishment was pronounced in the rarest instances only. The Nasi had the supreme direction of the court and convoked it when necessary. He sat at the head, and to his right hand was the seat of the Ab-Beth-Din; in front of them the rest of the members took their places according to their dignity, in a semi-circle.

The court met on extraordinary occasions in the house of the high priest; its general place of assembly, however, was a hall, probably situated at the S. W. corner of one of the courts of the temple. With exception of Sabbath and feast days it met daily. After the destruction of the temple and Jerusalem it finally established itself, after many migrations, in Babylon.

San Jacinto, Battle of, a notable battle that decided the independence of Texas. It was a desperate engagement between a Mexican force in command of Santa Ana, 1,600 in the ranks, and 783 Texans led by Sam Houston, April 21, 1836. The Mexicans were defeated and utterly routed. The scene of this event was on the banks of the San Jacinto river, 17 miles E. by S. of the present city of Houston.

San Jose Scale, a minute tree louse that is particularly destructive to orchards. It is no larger than a fly speck, and is often mistaken for such when appearing on fruit, but when examined with a microscope it is a most formidable six-legged insect. The male is distinguished by wings, the female being wingless. It is a native of Mexico, and has found its way into the United States and many parts of Europe, having been carried from country to country in shipments of fruit.

San Juan Islands, a group of islands now part of the State of Washington. They were occupied by both American and British garrisons in 1859, each nation claiming the right of exclusive possession.

Sankey, Ira David, an American evangelist; born in Edinburgh, Pa., Aug. 28, 1840; was associated with the evangelist, the late Dwight L. Moody, for some years, attracting and holding the attention of great audiences by singing hymns composed by himself.

San Luis de Potosi, a city of Mexico; capital of the State of the same name; 198 miles N. W. of Mexico, 6,350 feet above sea-level. Pop. 69,050. The state has an area of 25,316 square miles, is generally fertile, and has rich gold and silver mines. Pop. 568,449.

San Marino, the smallest republic in Europe, and one of its most an-

cient States; is enclosed by the provinces of Forli and Pesano and Urbino, of the kingdom of Italy; situated 9 miles S. W. of Rimini. The legislature of the republic is a senate of 60 members, elected for life equally from the ranks of nobles, citizens, and peasants. Two presidents are chosen by the senate every six months, called captains regent. Two secretaries of State and two legal functionaries are the other government officials. This little republic occupies a mountainous site, about 2,420 feet high, precipitous on all sides, with intervening dense forests and valleys of fertile land. The town is built round a hermitage, founded in 441, and is accessible by but one road. It is surrounded by great walls and has three forts. Many of the buildings are stately and massive in structure. The inhabitants are principally engaged in agriculture. The name of the town is the same as that of the republic. Area of the republic, 23 square miles; pop. about 9,500.

San Martin, Jose de, a Spanish-American general; born in Yapeyu, Misiones, Argentine Republic, Feb. 25, 1778. He was in the Spanish campaigns against France from 1793 till 1811, attaining the rank of lieutenant-colonel. He resigned from service and sailed for Buenos Ayres in 1812, where he joined the patriot army. An army of invasion was drilled for two years at Mendoza, and then San Martin in command of 4,000 men began, Jan. 17, 1817, his famous march over the Andes, leading his force through the Nepallata Pass, 12,800 feet high. On Feb. 12, 1817, he gained the victory of Chacabuco, which was followed by the capture and occupation of Santiago, Feb. 15. He was defeated on March 19, 1818, at Chancha Rayada, but gained a splendid victory on April 5 at the Malipo, which drove the Spaniards from Chile. He was offered the supreme directorship of Chile, but declined it and began preparations for the invasion of Peru. After much adventurous maneuvering, he captured and occupied Lima, July 9, 1821, and carried Callao through hard fighting. On Aug. 3, San Martin was proclaimed supreme protector of Peru. At this time Bolivar was leading an army S., and the success of the patriots was threatened by civil war. San Martin gave way to his rival, "for the good of the cause." On July 26, 1822, he held an interview with Bolivar, after which he resigned his office to the Peruvian Congress, Sept. 22, leaving Bolivar to complete the independence of Peru, San Martin retired from South American affairs, went to France and lived there in reduced circumstances till his death in Boulogne, France, Aug. 17, 1856.

San Salvador, a name given by Columbus to the first island he discovered in the New World, Oct. 12, 1492.

Sanskrit, the name of the ancient literary language of India. It forms the extreme branch of the great Indo-Germanic (Indo-European, Aryan) stock of languages, and the one which, thanks to its early literary cultivation (from 1500 B. C.) and grammatical fixation, and its consequent transparency of structure and fullness of form, approaches nearest to the parent language. In some respects, however, the primitive appearance of the Sanskrit, as of the closely allied Iranian or Persic branch, is now generally ascribed to a special Indo-Iranian development, or to a later return to a phonetic phase already outgrown by the parent language at the time of the separation. While it is admitted on all hands that the Aryan dialect out of which the literary language of India has developed can not have been indigenous to the peninsula, but must have been introduced from the N. E., there is still considerable difference of opinion as to the original home of the primitive Aryan community — whether it is to be sought for in Asia, as used to be universally believed till recent years, or whether, as many scholars are now inclined to think, it was from some part of Europe that the Asiatic Aryans originally came. On entering India, the Aryan tribes found the country occupied by people of different races; but, favored by physical and intellectual superiority, they gradually succeeded in extending their sway, as well as their language, and their social and religious institutions, over the whole of Northern India.

San Stefano, Treaty of, a treaty which put an end to the Russo-Turkish War; concluded March 3, 1878, at

San Stefano, a town of W. Constantinople and a port of the Sea of Marmora. By its terms Bulgaria was to become a principality, and Rumania, Servia, and Montenegro, were recognized as independent. Russia was to receive a war indemnity of 300,000,000 roubles, and the Dobrudja, Kars, Batum, and other possessions. The congress held at Berlin, in June and July, 1878, greatly altered the provisions of this treaty, effecting peace on somewhat more moderate terms.

Santa Ana, a tribe of North American Indians that live in a pueblo in North Central New Mexico, on the Rio Jemez, a tributary of the Rio Grande. The Spanish applied this name to the mission established at this pueblo, whose native name was Tamaya. This village is one of several in New Mexico occupied by the Keresan stock of Indians, under different names.

Santa Ana, or **Santa Anna, Antonio Lopez de,** a Mexican president; born in Talaha, Mexico, Feb. 21, 1795. He took a prominent part in the expulsion of the Spaniards from Mexico, and proclaimed the Mexican Republic in 1822. He was in the front during all the Mexican troubles till 1833, when he became president. In 1836 he was defeated and taken prisoner by the Texans, but returned the following year. He was again president in 1846 and commanded in the war with the United States (1846–1848). After General Scott's occupation of the city of Mexico, in September, 1847, he resigned and left the country, but was president in 1853–1855. He died in the City of Mexico, June 21, 1876.

Santayana, George, a Spanish-American poet and educator; born in Spain in 1863. He was assistant Professor of Philosophy at Harvard, and published: "Sonnets and Other Poems," and "The Sense of Beauty: An Outline of Æsthetic Theory," etc.

Santa Barbara Islands, a group of islands off the coast of California, extending about 175 miles. They lie opposite Santa Barbara, Los Angeles, and San Diego counties, at a distance varying from 20 to 65 miles. They are nine in number and consist of San Miguel, Santa Rosa, Santa Cruz, Anacape, Santa Barbara, Santa Catalina, San Clemente, San Nicolas, and San Juan.

Santal Wood, a dye wood obtained from a leguminous tree of the East Indies, Madagascar, etc.; also called sanders or saunders wood and red sandal wood. Santaline, a substance obtained from it, is used in dyeing blue and brown.

Santiago, the capital of the Republic of Chile and of the province of the same name, beautifully situated at the foot of the Andes, 112 miles E. of Valparaiso. Owing to the prevalence of earthquakes the houses are mostly of one story, and generally occupy a large space of ground, having gardens and patios or courts in the interior. The city was founded in 1541. Gold, silver, and lead are exported. It is the largest city on the W. coast of South America. Pop. 256,413.

Santiago de Cuba, a city, seaport, and capital of the province of the same name, Cuba; on a beautiful harbor opening through a narrow pass into the Caribbean Sea. It was made famous in the Spanish-American War by the splendid victory achieved by the American fleet outside of its harbor, and the later occupation of the city by American troops on the surrender of the Spanish army. The Spaniards claim that it is the oldest city in North America. It was founded in 1514 by Don Velasquez, the conqueror; is built on the side of a hill 160 feet above the bay and its harbor is one of the best along the American continent, but extremely difficult of access owing to the narrowness of its entrance.

Like Havana and San Juan, Santiago has its Castle Morro, built by the old Spanish warrior, Pedro de la Rocca, then governor of the province, about the year 1640, on the mountain to the right of the entrance. The word Morro means "overhanging lip," and all three castles mentioned are erected on extreme points of land commanding harbor approaches. That at Santiago is certainly the most picturesque; but looking at it one would scarcely credit it as possessing much effectiveness when pitted against modern men-of-war. From the point of view of the artist, however, it is per-

fect. Though the guns are chiefly of an old-fashioned type, pointing directly toward the sea, they are capable of being used with considerable effect against vessels attempting to force an entrance.

The neighborhood of Santiago is particularly rich in minerals, especially iron and copper; but the Spaniards have themselves done little to develop the mining industry. This has been left to American enterprise.

On the assumption of control by the American government, July 17, 1899, of that portion of the province of Santiago included in the surrendered territory, industries were practically at a standstill. In the rural districts all industries were at an end. The estates, almost without exception, had been destroyed, and no work was being done. Such foodstuffs as were being produced in the territory were the work of certain men of the Cuban army who were detailed for this purpose, in order to furnish such corn and vegetables as it was possible to secure for their friends in arms.

Their cane fields had been largely destroyed and the cane had become overgrown with weeds, brush, etc. Those individuals who were engaged in the raising of cattle had lost everything and it was difficult to find a cow or an ox. Horses were few and in wretched condition. Mining had ceased; all industries were practically dead. Every man who could manage it had a tiny garden, which furnished very limited subsistence. This he supplemented with such wild fruits as he could gather.

In the towns the effect of reconcentration was shown by large crowds of women and children and old men who were practically starving. They were thin, pale, and barely able to drag themselves about. The merchants and a few planters were the only prosperous people in the province. The stores all seemed to have a fairly good stock of goods, and to have been protected during the war. Their transactions at first were extremely limited, as people were without money or other means of barter. Hospitals were horribly overcrowded and practically without supplies of either food, medicine, or clothing. The same was true of the charitable institutions for children and old people. In the country towns a condition existed bordering closely on starvation. There was no work and no one with money sufficient to start in on work of any consequence, except a few large planters already referred to. Spanish money was universally in circulation, silver being worth about 50 cents on the dollar and the centen $5. The amount of money in circulation was extremely limited. Wages were at that time from 60 to 80 cents a day, Spanish money, for ordinary laborers, and from $1 up to $2.50, Spanish, for skilled mechanics. Such railroads as existed in the province were largely crippled by the destruction of bridges and rolling stock, and greatly in need of repairs, which had not been attended to during the war. On the different country roads and highways the bridges had been entirely destroyed.

The question of reaching the people throughout the province was a somewhat difficult one. It was solved, however, by sending the food to all the seaport towns and to such interior towns as could be reached with pack trains. Couriers were also sent through the country to notify the people where it could be found. Medicines and clothing were also issued in as large amounts as possible. Garrisons were sent to all important points with the purpose of restoring order and protecting those who wished to work, and the reëstablishing of the rural guard was commenced for the purpose of furnishing proper police protection in the interior districts. Medical officers were sent to the interior with these trains loaded with supplies, with instructions to do all that they could to relieve the sick and prevent the spread of disease. Strict orders were given to the rural and municipal police to treat robbers and others severely. Comparatively little disorder existed. The good behavior of the people was quite remarkable under the circumstances. Custom officers were appointed and every port of any consequence was soon put in charge of a collector, assisted by a force of native clerks, most of whom had had previous experience in the custom house under Spanish rule. The courts were gradually reorganized and supplied with necessary personnel and material. The prisons and jails were

carefully examined, and all political and military prisoners were, as a rule, released. Rations were given freely to those unable to work; to those having families able to work, they were given in payment only for labor. The amount of rations issued was very large. The civil government was gradually established, mayors and municipal officers being appointed for the various municipalities. These officers were always nominated by a committee of the best people and were efficient as a class. Such public work as the American authorities had means to undertake, was undertaken, not only for the purpose of public government, but for the sake of giving men work, with the proceeds of which to support themselves and families. Lighthouses were reëstablished, a new one built at Guantanamo, and the one at Santiago put in working condition. Commanding officers in all parts of the island were busily engaged in cleaning up towns and carrying out all possible sanitary and administrative reforms. Schools were established, some 60 in the city of Santiago and over 200 in the province as a whole, and the betterment of educational methods was energetically promoted.

Santo Domingo, a republic occupying the E. part of the island of Haiti, one of the Greater Antilles, West Indies. There are several mountain ranges running E. and W., between which are large and fertile plains. The coast is irregular, having a number of deep indentations which afford excellent harbors. The climate on the coast is hot and in some sections unhealthful. In the interior it varies, being mild and salubrious in the more elevated districts. Area, 18,045 square miles. Pop. 610,000.

The population consists largely of a mixed race of the aborigines and the first Spanish inhabitants, and of negroes and mulattoes, the former being less in number. There are a considerable number of whites descended from Europeans. Owing to the influence of the latter the Spanish language prevails. French and English are spoken in the towns. In more recent years many Cubans have settled in Santo Domingo, and their immigration has been encouraged.

The State religion is Roman Catholic, though other forms of worship with certains restrictions are tolerated.

Santo Domingo is governed under a constitution. The legislative power is vested in a national congress of 22 deputies, who are elected by popular vote. The executive power rests in a president, elected for a term of four years, and assisted by a cabinet of five ministers. A governor appointed by the president presides over each province and district.

The revenue is mostly derived from duties on imports and exports. In 1893 the custom house was taken in charge by the American Santo Domingo Improvement Company, which agreed to pay the interest on the foreign debt from March 1, of that year, to supply $90,000 per month for the budget, and to build with the help of the government, the railroad from Porto Plata to Santiago.

The principal occupation is that of sugar growing. Of later years considerable progress has been made under the impulse of American enterprise. The production of coffee, cocoa, bananas, and tobacco, is on the increase, and important industries are connected with forestry. In the S. and W. of the country extensive factories and sugar plantations are in operation. The commerce of the country is small. The trade is mainly with the West Indian Islands, the United States, England, Spain, Germany, and France. The principal exports in 1898 were sugar, mahogany, tobacco, coffee, cocoa, logwood, bananas, wax, honey, hides, dividivi, and rum.

The early history of this portion of the island, which remained Spanish when the W. part was ceded to France in 1697, and which was united with the neighboring State in 1795–1808, and in 1822–1843, properly belongs to that of Haiti. In 1843 it assumed a separate standing as the Santo Domingo republic, the anarchy and misrule of which it exchanged in 1861 for the despotism of its former masters. But the harsh Spanish rule brought on a revolt in 1863. The Spaniards were driven out by a force headed by Jose Maria Cabral in 1865, and the constitution of 1844, with a few changes, was reaffirmed. In November, 1869, Baez, the president, signed with President Grant a treaty

for the annexation of Santo Domingo to the United States, ostensibly with the approval of the people, but the United States Senate refused to ratify the treaty. The government is a despotism tempered by revolution, and one was in progress in 1903.

Santos-Dumont, a French aeronaut; born in Brazil, South America, about 1874; was educated largely in France, and on the death of his father, made his home in Paris. He was much interested in the problem of aerial navigation and devoted his time and fortune to the solution of the question. In 1900 he made several partly successful attempts to fly with his dirigible balloon; but it was not till 1901 that he succeeded in perfectly controlling his machine in the face of a strong wind. In September, 1901, he won the Deutsch prize of $20,000 for the navigation of a flying machine under certain conditions. In January, 1902, he made several successful flights near Monte Carlo.

Sap, the nutrimental fluid which circulates in plants. As it rises in the stem it is of a watery nature and contains the various inorganic matters absorbed by the roots, also some sugar, dextrine, and other organic substances which it has dissolved in its upward course. In its passage to the leaves it becomes more and more altered from the state in which it was absorbed by the roots; but when it reaches the leaves it is still unfitted for the requirements of the plant, and is hence termed crude sap. Through the action of the light and air it undergoes important changes in the leaves and other green parts, and becomes adapted for the nourishment of the plant. In this state it is termed elaborated sap.

Sapajou, the name generally given to a group of South American prehensile-tailed monkeys, including 15 or 16 species. One of the most common species is the weeper. They are small in size, playful in disposition, leading a gregarious life, and feeding chiefly on fruits and insects.

Sapindaceæ, soapworts; trees, shrubs, twining and with tendrils, rarely climbing herbs; found in South America, in India, and various tropical countries. Known genera, 50; species, 380.

Sapindus, the soap tree; trees or shrubs, with equally pinnate leaves, and panicles of white or greenish flowers. The acrid fruits placed in water, form a lather used in lieu of soap in the West Indies. If pounded and thrown into water they intoxicate fish.

Sapphire, a gem excelled in value by no precious stone except the diamond, and regarded as a variety of corundum, highly transparent and brilliant. It is sometimes colorless or nearly so. It more frequently exhibits exquisite color, generally a bright red (i. e., the ruby) or a beautiful blue — the latter being that commonly called sapphire. Purplish or greenish color indicates a flaw; and usual defects are clouds, milky spots, flakes, or stripes. It is found crystallized, usually in six-sided prisms, terminated by six-sided pyramids; it is sometimes found imbedded in gneiss, but more frequently occurs in alluvial soils. It occurs in Bohemia and Saxony, but European sapphires are of no commercial importance. The finest are found in Ceylon; Kashmir and Burma also produce fine specimens; and sapphires are found in Victoria, New South Wales, and parts of the United States. The value depends on quality more than on size, and does not increase with the size as does that of the ruby.

Sappho, a renowned Greek lyric poet; born in the island of Lesbos about 612 B. C. She wrote nine books of poems, but besides some small fragments of her poems we have in complete form only a "Hymn to Aphrodite" and an "Ode to a Beautiful Girl." In antiquity, as Homer was ever "The Poet" above all others; so Sappho was "The Poetess." She was also called "The Tenth Muse."

Saprophytic Plants, plants that feed on decaying organic matter. Saprophytes may obtain their nourishment and especially their carbon compounds either from the remains of dead organisms or from organic compounds formed by living organisms. The Fungi that live on the bark of trees and the leafsoil of forests and meadows (e. g., mushrooms) are examples of the former case; those that feed on the juice of fruits and sugary solutions (e. g., molds and yeasts) of the latter case. Examples of sapro-

phytes are found in the Phanerogams, the Fungi, and the Bacteria.

Sapsucker, the popular American name of several small woodpeckers.

Sapucaia Nuts, the seed of Lecythis ollaria and L. zabucajo trees, plentiful in the forests of the N. of Brazil. The fruit is urn-shaped, as large as a child's head, and opens by a lid which falls off. Each fruit contains a number of seeds or nuts, as in the case of the allied Brazil nut; but the flavor is finer; form, oval; somewhat pointed at both ends, which are slightly bent in opposite directions.

Saracen, an Arabian or other Mussulman of the early and proselytizing period; a propagator of Mohammedanism in countries lying to the W. of Arabia. By mediæval writers the term was variously employed to designate the Arabs generally, the Mohammedans of Syria and Palestine, or the Arab Berber races of Northern Africa. At a later time it was also applied to any infidel nation against which crusades were preached, such as the Turks.

Saracenic Architecture, the style adopted by the followers of Mahomet in building their mosques, palaces, and tombs. Originally the Arabs possessed no distinctive architectural style, and the style which they at length made their own was developed by architects belonging to the countries which they had conquered. This style is chiefly represented in Egypt, Persia, Spain, Turkey, and India, but the Saracenic architecture of Spain is generally called by the distinctive name of Moorish. The most prominent features of the style are the dome, the minaret, and the pointed arch. In Egypt the Saracenic art began with the mosque which Amru erected at Old Cairo in the 21st year of the Hegira (A. D. 642). Subsequently repaired and altered, it may now be considered as a good specimen of Moslem architectural art when freed from Christian influence. But the perfected Saracenic art dates from the building of a mosque at Cairo by Ibn Tooloon in A. D. 876. This building is nearly square (390 feet by 455) with a central court, around which on three sides are two ranges of arcades, while on the side toward Mecca there are five. It is built of brick covered with stucco. The mosque and tomb of Kaid Bey erected in 1463 outside Cairo is one of the most graceful specimens of Saracenic architecture.

Saratoff, a city of Russia, on the Volga; 500 miles S. E. of Moscow. It is a city of broad streets and fine squares, and stands on terraces rising from the river. There are nearly 30 churches; a handsome new cathedral (1825), an old cathedral (1697), and Radistcheff's Museum, sheltering a fine art gallery and a library. Manufactures of brandy, liquors, flour, oil, and tobacco are carried on. Fishing is prosecuted in the river, and market gardening (especially fruit and the sunflower) in the vicinity. There is an important trade in corn, salt, iron, wooden wares, textiles, and groceries. The city was pillaged by Pugatcheff in 1774 and suffered severely from fire several times during the 19th century. Pop. 137,109.

Saratoga, The, a wooden sailing ship of the United States navy; displacement, 1,025 tons. Sailing ships of this class are fast disappearing from the navies of the world, but for training the young apprentice into an able-bodied man-o'-war's man there is no better school. When not in actual service the "Saratoga" is used by the Public Marine School of Philadelphia.

Saratoga, Battles of, in the Revolutionary War, two battles fought 12 miles E. of Saratoga Springs, N. Y. Burgoyne led the British in the first, while the Americans were under command of Gates, who had Morgan and Arnold as subordinates. The fight on Sept. 19, 1777, was indecisive. On Oct. 7, 1777, the Americans achieved a splendid victory over the British, the commanders of both armies being the same as in the first engagement. The result was the surrender of Burgoyne and his army, numbering 5,752 men, to the Americans, Oct. 17, 1777. These contests are sometimes called in history the battles of Stillwater and Bemis' Heights. The American victory came at a critical period of the Revolution. It frustrated the British plan for cutting off New England from the other states, enlisted the help of France, altered the policy of Parlia-

ment and the King and saved the cause of the patriots. Creasy enumerates it in his "Fifteen Decisive Battles of the World."

Saratoga Springs, a village in Saratoga co., N. Y., 38 miles N. of Albany. Besides being one of the most fashionable summer resorts in the world, Saratoga is visited by many persons for its medicinal advantages. Here are about 30 mineral springs, some of which are of great celebrity, the water being used not only for local consumption, but bottled in large quantities for exportation.

Sarawak, a State of Borneo, extending from Cape Datoo on the W. to the Samarahan river on the E. Area about 50,000 square miles. Coast line about 400 miles. The aboriginal inhabitants, called Dyaks, consist of various wild tribes who in 1844 took for their sovereign an Englishman, Sir James Brooke, through whom the country is chiefly known. Pop. 500,000. Capital, Kuching.

In 1902 the Rajah of Sarawak sent an expedition of about ten thousand men to punish the Dyaks of the interior for hostile incursions into his dominions. The expedition proceeded in boats, but before it had gone far a frightful plague spread among the men, destroying almost nine thousand of them.

Sarcophagus, plural **Sarcophagi,** a kind of stone used among the Greeks for making coffins, and so called because it was believed to have the property of consuming the flesh of dead bodies deposited in it within a few weeks.

Hence a coffin or tomb of stone; a kind of stone chest used for containing a dead body. In modern times stone coffins are occasionally used for royal or distinguished persons.

Sardanapalus, the name of several Princes of Assyria, the most celebrated of whom was the last sovereign of the first Assyrian empire. His reign dates from 836 to 817 B. C., when he was dethroned by Arbaces and Belesis, at the head of a revolt

SARCOPHAGUS OF SCIPIO.

of the Medes, Persians, and Babylonians. In the last extremity, Sardanapalus, who had withstood a siege for three years in Nineveh, placed himself, his treasures, his wives, and his eunuchs on a funeral pile, which he fired with his own hand. He had ceased to exist when the city was taken, and that event was followed by the dismemberment of the Assyrian empire. The above date is only an approximation to the true one, as authorities vary.

Sardine, a name applied to several kinds of small fish, the true Mediterranean sardine. The fishing season begins early in June, and is now suc-

cessful in places along the Atlantic coast and on Puget Sound. In the United States an extensive industry is carried on, especially on the New England coast, in the way of preserving small fish such as smelts, which are sold under the name of sardines.

Sardinia, an island of Italy, after Sicily the largest in the Mediterranean; 135 miles W. of the mouth of the Tiber, and immediately S. of Corsica, being separated from it by the Strait of Bonifacio, 7½ miles wide; area, 9,206 square miles.

Sardinia is in nearly all respects a backward island. It has fine natural resources — fertile soil, valuable mines, extensive forests, rich fisheries, and excellent facilities for manufacturing industry. But owing to the old-fashioned conservatism of the people, their apathy, their primitive methods of agriculture, lack of enterprise and capital, and want of means of communication and long years of negligent, if not inefficient government, its resources are by no means developed to the extent they could be; many lucrative industries are in the hands of foreigners, others are neglected by the Sardes, and those that they do carry on are often carried on in a half-hearted manner and with obsolete methods. Of the total area about one-third is arable land, one-third pasture, and nearly one-third (28 per cent.) forest. The first place among the natural resources is taken by the agricultural products. The principal produce is wheat, barley, beans, potatoes, wine (21,500,000 gallons per annum), olive oil (1,500,000 gallons), oranges, lemons, tobacco, flax and hemp, cheese, butter, and wool. The breeding of horses is an important industry; and large numbers of cattle, sheep, swine, and goats are kept. The growing of fruits and the breeding of the domestic animals are both carefully attended to, and the products of both industries are improving; but the only improvement in the management of the soil is the drainage of the marshes by the government and private individuals.

Besides being in ancient times the granary of Rome, Sardinia was renowned for its mineral wealth. Iron, copper, lead, zinc, antimony, manganese, and lignite exist. Granite, marble, and clay for pottery are quarried. Salt is manufactured from sea water, chiefly by convicts of Cagliari. The mines are mostly situated in the S. W. in the neighborhood of Iglesias. The center and N. of the island are chiefly covered with forests, though they are being all too rapidly diminished. The commonest as well as the most valuable trees are the oak, ilex, cork, and wild olive, which yield timber, cork bark for tanning, acorns, and charcoal to the annual value of close on $1,500,000. It forms a part of the kingdom of Sardinia.

Sardis, the capital of ancient Lydia in Asia Minor; stood at the N. foot of Mount Tmolus (5,906 feet), 2½ miles S. of Hermus. Through its market place flowed the Pactolus over sands rich in gold, an allusion in all probability to the wealth of the inhabitants, who wove woolen stuffs and carpets, and organized the traffic between the highlands of the interior and the coast; it was, moreover, the grand and luxurious capital of Crœsus, a monarch of fabulous wealth. As Byzantium rose to importance, Sardis lost the advantages of its situation on the great land route between Persia and Rome, and gradually declined. At the present day there is nothing left at its site, Sart, except a small village and ruined mounds.

Sardou, Victorien, a French dramatist; born in Paris, Sept. 7, 1831. He began play-writing in early life, though intended originally for the medical profession. Among his plays are: "Cleopatra," "Thermidor," "Gismonda," "Madame Sans-Gene," "Pamela," etc. He was elected to the Academy in 1877.

Sargent, Aaron A., an American diplomatist; born in Newburyport, Mass., Sept. 28, 1827. He became district attorney of Nevada in 1856; was vice-president of the Republican National Convention in 1860; served several terms in Congress; was for six years a member of the United States Senate; and in 1882 was appointed United States minister to Germany by President Garfield. He died in San Francisco, Cal., Aug. 14, 1887.

Sargent, Charles Sprague, an American aboriculturist; born in Boston, Mass., April 24, 1841. He was director of the Botanic Garden and

Arboretum (1872–1878), and Professor of Arboriculture at Harvard after 1878. He wrote many authoritative reports and books.

Sargent, Epes, an American author; born in Gloucester, Mass., Sept. 27, 1813. His works include a "Life of Henry Clay." "Songs of the Sea," and "A Life on the Ocean Wave" are the most popular of his verses. His "Cyclopædia of English and American Poetry" was published in 1883. He died in Boston, Dec. 31, 1880.

Sargent, Herbert Howland, an American military officer; born in Carlinville, Ill., Sept. 29, 1858; was graduated at the United States Military Academy in 1883 and assigned to frontier duty. At the breaking out of the Spanish-American War in 1898, he was first engaged in organizing volunteer troops, but was early sent to Santiago, Cuba; thence to Guantanamo in 1899; and back again to the United States in May of that year. In July, 1899, he was ordered to Luzon, where he participated in several engagements with the insurgents, and commanded the attacking forces at the battle of San Mateo. In June, 1900, he was appointed judge advocate of the department of S. Luzon.

Sargent, James, an American inventor; born in Chester, Vt., Dec. 5, 1824; became a partner in the Yale & Greenleaf Lock Co., in 1857; patented and began the manufacture of a burglar-proof lock in Rochester, N. Y., in 1865, and subsequently invented and placed on the market many varieties of locks. He invented the glass enameled steel tanks and vacuum pumps used by the Pfaudler Vacuum Fermentation Co.; the automatic semaphore railroad signals, and in 1873 patented the time locks which bear his name.

Sargent, John Osborne, an American lawyer; born in Gloucester, Mass., Sept. 20, 1811; was graduated at Harvard University in 1830. Later with Alexander C. Bullitt he founded the "Republic," in which he opposed both the Secession and Abolition parties. In 1861–1873 he lived abroad, but during the latter year returned to New York city. His publications include "Lectures on the Late Improvements in Steam Navigation and Arts of Naval Warfare," etc.

Sargent, John Singer, an American artist; born in Florence, Italy, in 1856; took a medal of honor at the Paris Exposition in 1889; and was elected an academician of the Royal Academy, England, in 1891, and of the National Academy of Design in New York in 1897. His works include figure pieces, and numerous sketches, ideal figures, etc. He died April 13, 1900.

Sarmatians, a people of supposed Asiatic race, who in the time of the Romans occupied the vast region between the Black, Baltic, and Caspian Seas. They were a nomadic race, whose women went to war like the men, and they were said by tradition to be descended from the Amazons by Scythian fathers. Sarmatia coincided in part with Scythia, but whether the people were of the same race is doubtful.

Sarmiento, Domingo Faustino a South American writer; born in San Juan, Argentine Republic, Feb. 15, 1811. He was Minister of Public Instruction in 1860, Minister of the Interior in 1861, and while minister to the United States was elected president of the republic (1868). During 1845–1847 he visited Europe and the United States to study the system of primary schools. During his travels he made the acquaintance of Cobden, Guizot, Humboldt, and Horace Mann; under the influence of the latter he wrote "Popular Education," published (1848) by the Chilean government. Other important works of his are: "Life of Lincoln" (1866), and "The Schools, the Foundation of Well Being in the United States" (1868). He died in Asuncion, Paraguay, Sept. 11, 1888.

Sarpi, Pietro (surnamed Servita), better known by his monastic appellation, Fra Paolo; an Italian historian; born in Venice, Aug. 14, 1552. embraced the monastic life, and took the vows in the religious order of the Servites in 1565. Five years later the Duke of Mantua made him his court theologian; but he was soon after summoned to be Professor of Philosophy in the Servite monastery at Venice, and there he remained all the rest of his life. In the dispute between the republic of Venice and Paul V. on the subject of clerical immunities

Sarpi stepped forward as the valiant champion of the republic and of freedom of thought. On the repeal (1607) of the edict of excommunication launched against Venice, Sarpi was summoned to Rome to account for his conduct. He refused to obey, and was excommunicated as contumacious; and an attempt was made on his life by a band of assassins. He afterward confined himself within his monastery, where he wrote "History of the Council of Trent," a "History of the Interdict," and other works.

Sarsaparilla, a native of Central America. The rhizome of sarsaparilla is popularly called the chump; one with roots and rootlets, the latter finely subdivided, is said to be bearded. The name is also applied to a plant which grows wild in the United States and Canada.

Sartain, John, an American artist; born in London, England, Oct. 24, 1808; came to the United States in 1830, and was one of the first to introduce mezzotint engraving. He held various offices in the Artist's Fund Society, the School of Design for Women, and the Pennsylvania Academy; was elected a member of the Society Artis et Amicitiæ in Amsterdam, Holland, in 1862, and in 1876 had charge of the art department at the Philadelphia Centennial Exposition. He was the author of a large number of engravings for book illustration, and engraved many historical paintings; designed the monument to Washington and Lafayette in Monument Cemetery, Philadelphia; and published interesting personal reminiscences. He died in Philadelphia, Pa., Oct. 25, 1897.

Sarti, Giuseppe, an Italian musical composer; born in Faenza, Italy, Dec. 1, 1729. The success of two operas, "Pompey in Armenia" and "The Shepherd King" brought him a royal invitation to Copenhagen in 1753; and there he remained till 1775. After his return to Italy he was successively director of the conservatory at Venice, and chapel master of Milan cathedral. During this period he composed some of his most successful operas. In 1784 Catharine II. invited him to St. Petersburg. He died in Berlin, July 28, 1802.

Sarto, Andrea del, one of the most distinguished painters of the 16th century; born near Florence, Italy, July 16, 1486. He is best known in galleries by his "Holy Families." He was highly distinguished for his excellence in fresco, and it was in this form of art that his naturalness of design, fineness of color, and careful execution became most apparent. He died of the plague in Florence, Jan. 22, 1531.

Sasin, the common Indian antelope, female destitute of horns, those of the male spiral, wrinkled at the base, annulated in the middle and smooth at the tip; head small, body light, legs long and slender; adult males dark above, white beneath, the nose, lips, and a circle round each eye white; small brushes of hair on the knees; females and young males under three

SASSAFRAS OFFICINALE.

a, branch of male tree in flower; *b*, branch with ripe fruit and developed foliage.

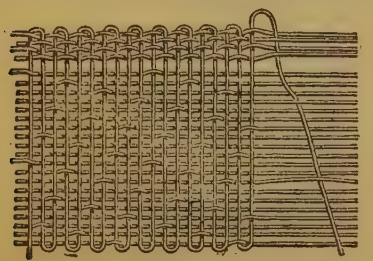
years old tawny above, white beneath, with a light silvery band along the sides. It is common in India, where it herds in groups, one male to many females, with vigilant sentinels. Their flesh being lightly esteemed, they are not much hunted.

Sassafras, in botany, a genus of plants. One kind is a large tree with yellowish flowers, growing in the United States.

Sassanidæ, a Persian dynasty of kings, which succeeded the Parthian dynasty of the Arsacidæ, and reigned from 226 B. C. to about A. D. 636. The dynasty began with Ardishir Babigan, and owes its name to the grandfather of that prince, named Sassan.

Satellite, a subordinate attendant; an obsequious or subservient follower. Hence, in astronomy, a secondary planet revolving around a primary one. The moon is satellite to the earth. With it there are 21 satellites in the solar system. Mars has two, Jupiter five, Saturn eight, Uranus four, and Neptune one.

Satin, a silken fabric with an overshot woof and a highly finished surface. The woof is coarse, and hidden



SATIN.

underneath the warp, which forms the surface. The warp is of organzine, the weft of tram. In a full satin twill there is an interval of 15 threads.

Satin Bird, a kind of Australian bower bird. The adult male is conspicuous for the satin texture of its glossy black plumage.

Satin Spar, in mineralogy, a finely fibrous variety of gypsum, with a pearly luster when polished; also a fibrous variety of aragonite, giving a satin like aspect when polished; distinguished from the gypseous mineral by its greater hardness and its effervescence with acids.

Satin Wood, an ornamental cabinetwood from the West and East Indies.

Satire, keenness and severity of remark; sarcasm; trenchant wit; biting ridicule; incisive humor; pungent irony; denunciation and exposure to derision or reprobation. In literature, the representation of follies or vices in a ridiculous form, either in discourse or dramatic action. Though the name satire is usually confined to poetical compositions, prose works of a satirical character are frequently included under the same head. Modern nations have not generally furnished many distinguished satirists. Among the French may be mentioned Rabelais, Montaigne, and Voltaire, and in England, Pope, Swift, Fielding, Byron, and Thackeray.

Satterlee, Henry Yates, an American clergyman; born in New York city, Jan. 11, 1843; was graduated at Columbia University in 1863 and was ordained in the Protestant Episcopal Church in 1867. In 1896 he was consecrated Bishop of Washington.

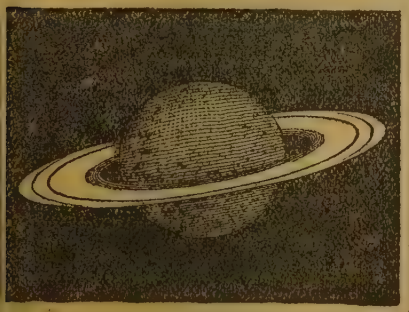
Satterlee, Herbert Livingston, an American lawyer; born in New York city, Oct. 31, 1863; was graduated at Columbia University in 1883 and admitted to the bar in 1885. He served as William M. Evart's private secretary in 1886–1887; and was lieutenant U. S. N. and chief of Capt. J. R. Bartlett's staff during the Spanish-American War. He was for several years president of the Naval Reserve Association, and early became a member of the American Social Science Association. His publications include "Political History of the Province of New York," etc.

Saturday, for Saturn, and daeg, a day — the day presided over by the planet Saturn, the seventh or last day of the week; the day of the Jewish Sabbath.

Saturn, in mythology, the youngest son of Cœlus (Uranus) and Gaia, the goddess of the earth. Being banished by Jupiter from heaven, he fled to Latium, and was received by Janus, King of Italy, who made him his partner on the throne. Saturn occupied himself in softening the barbarous manners of the people of Italy, and in teaching them agriculture and the useful and liberal arts. His reign there was so mild and beneficent that mankind have called it the Golden Age.

to intimate the happiness and tranquillity which the earth then enjoyed. He is generally represented as an old man bent through age and infirmity, holding a scythe in his right hand. His temple was the State treasury.

Saturn, in astronomy, the 6th of the major planets in order of distance from the sun, and the outermost known to the ancients. Its mean diameter is about 70,000 miles, its mean distance from the sun somewhat more than 872,000,000 miles, and its year or periodical revolution around the



SATURN, THE PLANET.

sun nearly twenty-nine and one-half years. Its mass is about 90 times that of the earth. Saturn is attended by eight satellites, and surrounded by a system of flat rings, which are now supposed to be an immense multitude of small satellites mixed probably with vaporous matter.

Saturnalia, the feast in honor of Saturn, celebrated by the Romans in December, and regarded as a time of unrestrained license and merriment for all classes, even for the slaves. Hence, any time of noisy license and revelry; unrestrained, licentious revelry.

Satyr, in mythology, one of a number of rural deities of Greece, identical with the Fauni of the Latins. They are regarded as the attendants of Bacchus, and are represented as roaming through the woods, dwelling in caves, and endeavoring to gain the love of the Nymphs. They are usually represented with the feet and legs of goats, short horns on the head, and the body covered with thick hair.

Sauer Kraut, or **Sour Krout,** a favorite German dish, consisting of cabbage cut fine, pressed into a cask, with alternate layers of salt, and suffered to ferment until it becomes sour.

Sauger, Joseph P., an American military officer; born in Utica, N. Y., May 8, 1840. He served with distinction in the Civil War, rising to the rank of brevet major in 1865; commanded a battery in the Brooklyn "Whisky Riots" in 1871. He was appointed a Brigadier-General of volunteers in 1898; was assigned to command the District of Matanzas, Cuba, in July, 1899; and in September of that year was made Director of the Census of Cuba and Porto Rico. He became inspector-general in February, 1901.

Saul, King of Israel from about 1095 to 1056 B. C.; the son of Kish, a Benjamite. Selected for this office by Samuel, he obtained, by his personal courage and military capacity, several successes over the Philistines, Edomites, Moabites, and Ammonites, by means of which he consolidated the tribes and confirmed his authority. After a long reign the wild nature of the king at length showed itself in a kind of religious frenzy, which is briefly described in the Bible as an "evil spirit of God," and led him to the massacre of the priests of Nob and various similar excesses. Meanwhile the prophet Samuel, estranged by the king's misdeeds, had anointed David as his successor, and this took effect when Saul was slain.

Saunders, Alvin, an American legislator; born in Fleming co., Ky., July 12, 1817. He was a member of the convention which framed the constitution of Iowa in 1846; governor of the Territory of Nebraska in 1861–1867, when Nebraska was admitted to the Union. He served in the United States Senate in 1877–1883. He died in Omaha, Neb., Nov. 1, 1899.

Saunders, Frederick, an American librarian; born in London, England, Aug. 14, 1807. He came to the United States in 1837 and was librarian of the Astor Library, New York, 1859–1896. He is the author of numerous works. Died 1902.

Saunders, Richard, the name under which Benjamin Franklin published his almanac, 1732–1757.

Sauria, or **Saurians,** an order of reptiles, including all those which, like the crocodile and lizard, are covered with scales and have four legs. The most gigantic and remarkable specimens of saurian reptiles are now extinct, but their fossil remains, immense in size and wonderful as they appear, afford incontestable evidence of their similarity in structure to the harmless little lizard of the present day. The diversity in the habits of the existing saurians is very considerable — some being more or less aquatic, others strictly terrestrial, while others are essentially arboreal. The greater part feed on animal substances; some of them preferring fish, and others attacking small animals, while some are entirely insectivorous, and a few are herbivorous. They are all furnished with teeth, which are of a simple conical form, and adapted rather for securing and tearing their prey than for masticating it; their toes are generally furnished with claws, and they all have a tail more or less strong, and generally very thick at the base. A few species, exceptions to the general character, have only two legs.

Sausage, an article of food, consisting of chopped or minced meat, as pork, beef, or veal, seasoned with sage, pepper, salt, etc., and stuffed into properly cleaned entrails of the ox, sheep, or pig, twisted at short intervals into sections. When sausages are made on an extensive scale the meat is minced and stuffed into the intestines by machinery.

Sausage Poison, the poisonous agent or principle existing in sausages made or kept under certain unknown conditions. It has been variously regarded as empyreumatic oil, as an acid formed in consequence of a modified process of putrefaction, and as the effect of a fungus, Sarcina botulina.

Saussure, Henri de, a Swiss naturalist; born in Geneva, Switzerland, in 1829. He was a member of the scientific expedition to Mexico, and wrote several memoirs on the insects of that country. He wrote also: "Memoir to Serve for the Natural History of Mexico, the Antilles, and the United States," "The Genevan Explorers of the Alps."

Saussure, Horace Benedict de, a Swiss physicist; born in Conches, Switzerland, Feb. 17, 1740; was appointed Professor of Physics and Philosophy in the University of Geneva in 1762. In 1768 he began a tour of the mountain regions of Europe, being the first traveler to ascend to the summit of Mont Blanc. His observations helped to establish the basal facts of geology; and for his investigations he perfected the thermometer, the hygrometer, the endiometer, electrometer and anemometer and invented the cyanometer and daphanometer. He died in Geneva, Jan. 23, 1799.

Savage, James, an American historian; born in Boston, Mass., July 13, 1784; was graduated at Harvard University in 1803. He served as president of the Massachusetts Historical Society for several years. He was the author of "Genealogical Dictionary of the first settlers of New England," and other historical works. He died in Boston, Mass., March 8, 1873.

Savage, John, an American journalist; born in Dublin, Ireland, Dec. 13, 1828. He settled in New York in 1848, and subsequently in Washington became proprietor of "The States," the organ of Stephen A. Douglas. He died in Spragueville, Pa., Oct. 9, 1888.

Savage, Minot Judson, an American clergyman; born in Norridgewock, Me., June 10, 1841. He was graduated at the Theological Seminary at Bangor, 1864. He accepted a call to the Third Unitarian Church in Chicago in 1873, and after a year there was installed pastor of the Church of the Unity, Boston, where he remained for 22 years. After 1896 he was minister in the Church of the Messiah, New York, in association with Dr. Robert Collyer. In his very active career he has published over 30 books on religious, social and moral questions.

Savage, Richard Henry, author; born in Utica, N. Y., June 12, 1846; graduate of West Point, and lieutenant in U. S. army, and later with Egyptian army. Died October, 1903.

Savage Island, a small coral island in the Pacific Ocean, between the Samoan and Tongan islands. It is about

30 miles in circuit and has a population of 5,000 nominal Christians. It was annexed by Great Britain in 1888.

Savanna, or **Savannah,** an extensive open plain or meadow in a tropical region, yielding pasturage in the wet season, and often having a growth of undershrubs. The word is used chiefly in tropical America.

Savary, Ann Jean Marie Rene, Duc de Rovigo, a French military officer; born in Marcq, France, April 26, 1774. Napoleon, whose notice he had attracted, made him commander of his bodyguard and employed him in diplomatic affairs for which he showed an admirable capacity. Created Duke of Rovigo, he was sent to Spain by the emperor, and negotiated the perfidious arrangement by which the Spanish king and his son were kidnapped. In 1810 he superseded Fouche as minister of police. After the fall of Napoleon he wished to accompany him to St. Helena; but he was confined by the British government at Malta for some months, and at last made his escape to Smyrna. After experiencing several vicissitudes he returned to Paris in 1819, and was reinstated in his titles and honors. In 1831 he was appointed Commander-in-Chief of the army in Algeria; but ill health forced him to withdraw to France. He wrote his "Memoirs" in 1828. He died in Paris, June 2, 1833.

Savidge, Eugene Coleman, an American physician; born in Maryland, Oct. 21, 1863; was graduated at the University of France in 1888, and then studied in the University of New York. After traveling extensively he devoted his time to medicine and literature; was gynæcologist at the Roosevelt Hospital, and became a member of the New York Academy of Medicine.

Savigny, Friedrich, Karl von, a German jurist; born in Frankfort-on-the-Main, Feb. 21, 1779. He stood long at the head of what is termed the historical school of jurisprudence. He died in Berlin, Oct. 25, 1861.

Savonarola, Girolamo, an Italian reformer; born of a noble family in Ferrara, Sept. 21, 1452. He was educated at home, and at a very early age became deeply versed in the philosophy of the schools; but his disposition was from the first tinged with religious asceticism, and in 1474 he formally withdrew from secular affairs and entered the Dominican Order at Bologna. Having completed his novitiate and the studies of the order, he seems to have made his first public appearance as a preacher in 1482, at Florence. His first trial, however, was a failure.

His second appearance in the pulpit of San Marco was a complete success. The great subject of his declamation was the sinfulness and apostasy of the time; and for his half-expositions, half-prophetical outpourings, his followers claimed for him the character of an inspired prophet.

Up to this time, however, Savonarola's relations with the Church were, if not of harmony, at least not of antagonism; and when, in the year 1493, a reform of the Dominican Order in Tuscany was proposed under his auspices, it was approved by the Pope, and Savonarola was named the first vicar-general. About this date, however, his preaching had assumed a directly political character, and the predictions and denunciations which formed the staple of many of his discourses pointed plainly to a political revolution in Florence and in Italy as the divinely ordained means for the regeneration of religion and morality. In one of his discourses he pointed plainly to the advent of the French under Charles VIII. Very soon, however, the French were compelled to leave Florence, and a republic was established, of which Savonarola became, though without political functions, the guiding and animating spirit, his party being completely in the ascendant.

It was during this brief tenure of influence that Savonarola displayed to the fullest extent both the extraordinary powers of his genius and the full extravagance of the theories to which his enthusiastic asceticism impelled him. The republic of Florence was to be the model of a Christian commonwealth, of which God Himself was the chief ruler, and His Gospel the sovereign law; and thus the most stringent enactments were made for the repression of vice, and of all the sinful follies by which it is fomented and maintained.

Meanwhile, the extremes of his rigorism, the violence of his denunciations, which did not spare even the Pope himself, drew on him the displeasure of Rome. He was cited, in the year 1495, to answer a charge of heresy at Rome; and, on his failing to appear, he was forbidden to preach; the brief by which the Florentine branch of his order had been made independent was revoked; he was offered a cardinal's hat on condition of his changing his style of preaching — an offer he indignantly refused; and he was again forbidden to preach. Once again Savonarola disregarded this order.

At the critical point of the struggle of parties came, in 1497, a sentence of excommunication from Rome against Savonarola. Savonarola openly declared the censure invalid, because unjust, and refused to hold himself bound by it. When the new elections took place, the party opposed to Savonarola, the Arrabbiati, came into power. He was ordered to desist from preaching; and the struggle was brought to a crisis by the counterdenunciations of a preacher of the Franciscan order, long an antagonist of Savonarola, Francesco da Puglia.

In the midst of this reaction he was cited before the council, and brought to trial for falsely claiming to have seen visions and uttered real prophecies, for other religious errors, and for political insubordination. He denied the charges; but, put to the torture, he made avowals which he afterward withdrew. The conclusion was a foregone one; he was declared guilty of heresy and of seditious teaching, and of being an enemy to the peace of the Church. The acts of the trial were sent to Rome, where the sentence was confirmed; he, with two disciples of his order, was given up to the secular power; so on May 23, 1498, this extraordinary man and his two companions, brothers Domenico and Silvestro, were strangled, and their bodies burned by the executioner. They died professing their adherence to the Catholic Church, confessed and received absolution, and on the morning of the execution Savonarola administered the last communion to his two companions and himself. There seems no doubt that Savonarola firmly believed in the dogmas of the Roman Catholic Church; and it is only as a moral and religious reformer, and not a theological teacher, that he can in any way be regarded as a forerunner of the Reformation of the 16th century.

Savoy, House of, one of the most ancient royal families, and also distinguished for having produced more great warriors and politicians than any other royal house of Europe. Its origin is not historically established, but most genealogists trace it to a German count, Berthold, who, in the 11th century, established himself on the W. slope of the Alps between Mont Blanc and Lake Leman. In 1111 his descendants were enrolled among the counts of the Holy Roman empire. Count Amadeus, in 1383, founded a law of primogeniture which greatly strengthened the family, leading to the immediate acquisition of the territory of Nice. In 1416 the Counts of Savoy adopted the title of duke; and in 1418 they acquired the principality of Piedmont. Taking part in the great wars between France and the Holy Roman empire, now on the one side and then on the other, as policy dictated, the Princes of Savoy increased their possessions in all directions, but chiefly toward the S.; and at the peace of Utrecht in 1713 they obtained the island of Sicily, with the title of king. Sicily had to be exchanged, in 1720, for the isle of Sardinia, to which henceforth the royal dignity remained attached. Genoa and the surrounding territory were added to the Sardinian crown at the peace of 1815. The direct male line of the house of Savoy died out with King Charles Felix, in 1831, and the existing Salic law prohibiting the accession of females, the crown fell to Prince Charles Albert, of the House of Savoy-Carignan. The latter branch — taking its name from a small town in the province of Turin — was founded by Thomas Francis, born in 1596, a younger son of Duke Charles Emanuel I. of Savoy. King Charles Albert, the first of the house of Savoy-Carignan, abdicated the throne, March 23, 1849, in favor of his son, Victor Emanuel II., the first King of Italy.

Savoy Conference, in Church history, the name given to the meetings of the Commissioners for the Revision

of the Liturgy in the reign of Charles II. Twelve bishops took part in the proceedings on behalf of the Establishment, while the Nonconformists were represented by Baxter, Calamy, Reynolds, and others of their leaders. The first meeting took place on April 15, 1661, and the Commission sat for four months.

Saw-Bill, a family of birds. This family is represented in North America by the saw-bill of Mexico.

Sawfish, so called from the saw-like weapon into which the snout is produced. They are common in tropical and less so in subtropical seas, and attain a considerable size, specimens with a saw six feet long and a foot broad at the base being far from rare. Their offensive weapon renders them dangerous to almost all other large inhabitants of the ocean.

HEAD OF SAWFISH FROM BELOW.

Sawflies, a group of insects. The turnip fly and the gooseberry fly are examples.

Sawyer, Charles Henry. an American manufacturer; born in Watertown, N. Y., March 30, 1840. He was a Republican governor of New Hampshire in 1887–1889. In the latter year he was the New Hampshire commissioner to the Paris Exposition.

Sawyer, Leicester Ambrose, an American author; born in Pinckney, N. Y., July 28, 1807. He was pastor of various churches (1842–1859), and published a notable new translation of the New Testament, without the usual division into verses. Died 1898.

Sawyer, Sylvanus, an American inventor; born in Templeton, Mass., April 15, 1822. In 1843 he patented a machine for preparing chair-cane from rattan; brought about many improvements in rifled cannon projectiles in 1853–1855; took out patents on dividers and calipers in 1867; invented a steam generator in 1868; obtained a patent for a sole-sewing machine in 1876, and for a watchmaker's lathe in 1882. He died in Templeton, Mass., Oct. 28, 1895.

TURNIP SAWFLY.

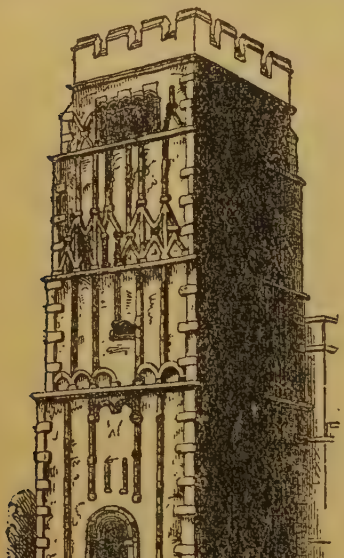
Saxe, John Godfrey, an American humorous poet; born in Highgate, Vt., June 2, 1816. He was also well known as a lecturer. His most popular verses include "Rhyme of the Rail" and "The Proud Miss McBride"; and many published works. He died in Albany, N. Y., March 31, 1887.

Saxhorn, a brass instrument, invented by A. A. J. Sax, constructed in such a manner that the large portion, after passing under the arm of the performer, repasses over his shoulder, presenting the bell to the front. The advantage of this shape is that it avoids the elbows, which would otherwise impair the progress of the sound. Saxhorns have great powers, more especially the contra bassos in E and B flat; the latter of which has 48 feet of development in its tube.

Saxicava, a genus of marine mollusks with numerous species ranging from low water to 140 fathoms. It is found in the Arctic seas, where it attains its largest size, in the Mediterranean, at the Canaries, and in Cape Colony. It bores into stone, and

has done great damage to submarine masonry.

Saxon Architecture, the style of architecture in use in England from the time of its conversion till the Conquest. It is easily recognized by its massive columns and semicircular



SAXON ARCHITECTURE.—TOWER IN NORTHAMPTONSHIRE, ENGLAND.

arches, which usually spring from capitals without the intervention of the entablature.

Saxons, a Germanic people, whose name is usually derived from an old Teutonic word sahs, meaning "knife," though some authorities believe it to be another form of Sassen = "the settled people." In the 3d century they invaded the Roman territory; but their piratical descents on the coasts of Britain and Gaul are far more famous. About 450 they in conjunction with the Angles established themselves permanently in the island and founded the Anglo-Saxon kingdoms. Before the 5th century they had settled along the North Sea coasts from the Elbe to the Loire, a part of what was later Flanders being called the "Saxon shore." But these Saxon settlements soon became absorbed in the kingdom of the Franks. But the Saxons having thrown off the yoke, wars between the Saxons and the Franks were constant after 719; and the desperate resistance of the Saxons was not broken till 804. After the final submission the conquered people accepted Christianity.

Saxophone, the name of a family of musical instruments invented by M. Sax. They consist of a conical brass tube, sounded by a mouthpiece furnished with a single reed similar to that of the clarinet, and are made in as many different keys as the saxhorn. They are greatly valued in military music, but are not much used in the orchestra.

Say, Jean Baptiste, a French economist; born in Lyons, France, Jan. 5, 1767. He popularized the theories of Adam Smith in France. His best-known work is "Treatise on Political Economy." His "theory of markets" attracted great attention. He died in Paris, Nov. 15, 1832.

Say, Jean Baptiste Leon, a French statesman and economist; grandson of the preceding; born in Paris, June 6, 1826. He was elected to the National Assembly in 1871, and in the following year became Minister of Finance in the government of M. Thiers. He occupied this position in successive ministries; was appointed ambassador to London in 1880, and soon afterward was elected president of the Senate. Among his works are: "Finances of France"; "State Socialism"; "Democratic Solution of the Tariff Question"; and "Turgot." He edited "The Dictionary of Finance" and "The New Dictionary of Political Economy." He died April 21, 1896.

Say, Thomas, an American naturalist; born in Philadelphia, Pa., July 27, 1787; was one of the founders of the Academy of Natural Sciences in Philadelphia in 1812; participated in a scientific exploration of the coasts and adjacent islands of Georgia and

Florida in 1818; was chief geologist of an expedition to the Rocky Mountains in 1819–1820. He is supposed to have discovered more new species of insects than any naturalist prior to his time. He died in New Harmony, Ind., Oct. 10, 1834.

Sayce, Archibald Henry, an English Orientalist; born near Bristol, England, Sept. 25, 1846. His works extend over various fields and are of great importance for comparative philology and history.

Sayles, John, an American author; born in Vernon, N. Y., March 9, 1825. He served in the Civil War as Brigadier-General of Texan militia; and in 1880 became Professor of Law in Baylor University. He was the author of many works on Texan law. He died in Abilene, Tex., May 22, 1897.

Sayre, David Austen, an American philanthropist; born in Battle Hill, N. J., March 12, 1793; removed to Lexington, Ky., where he became a successful merchant and banker. He was noted for his benevolence; gave $100,000 to found Sayre Institute; and about $400,000 to other benevolent objects. He died in Lexington, Ky., Sept. 11, 1870.

Sayre, Lewis Albert, an American surgeon; born in Battle Hill, N. J., Feb. 29, 1820. In 1842 he became prosecutor to the Professor of Surgery in the College of Physicians and Surgeons, which office he held till made prosecutor emeritus in 1852. He was the first American to remove the head of the femur in hip-joint disease. He performed this operation in 1854, and in seven years had created by this and other original methods a practically new department in his profession. He died in New York city, Sept. 21, 1900.

Scab, a disease of sheep, analogous to itch in man, or mange in horses or dogs, depending on the irritation of three varieties of minute acari, some of which burrow in the skin, especially if dirty and scurfy, causing much itching, roughness, and baldness.

Scabbard, the sheath of a sword or bayonet, made of metal, wood, leather, rawhide, or paper.

Scabbard Fish, a fish fairly common in the Mediterranean and the warmer parts of the Atlantic. It is probably a deep sea fish. Its length is from five to six feet.

Scad, or **Horse Mackerel,** a genus of fishes included in the family mackerels, and found around the coasts of Great Britain. It appears in large shoals, and the flesh, though coarse, is esteemed and eaten salted during the winter months.

Scadding, Henry, a Canadian author; born in Dunkeswell, Devonshire, England, July 29, 1813; removed to Canada in 1821; was graduated at St. John's College, Cambridge, England, in 1837; was rector of the Church of the Holy Trinity in Toronto in 1847–1875; and president of the Canadian Institute in Toronto in 1870–1876.

Scagliola, a term applied to ornamental plaster work, made of finely-ground calcined gypsum worked into a paste with glue. It produces the most perfect imitation of marble, from which it can scarcely be distinguished either by the eye or the touch, as it takes an equally high polish and is equally hard and cold to the touch.

Scald Head, the popular name of a fungous parasitic disease of the scalp (and occasionally of the face and other parts). The primary seat of the parasite is in the lowest portion of the hair follicles, outside the layer of epithelium which covers the root of the hair.

Scale, a measure, consisting of a slip of wood, ivory, or metal, divided into equal parts, usually main divisions and subdivisions; as, inches or octonary fractions for carpenters' work, decimal divisions and subdivisions for chain work, duodecimal for plotting carpenters' work, which is in feet and inches. The meter and its decimal subdivisions are also sometimes employed. Also any instrument, figure or scheme graduated for the purpose of measuring extent or proportions.

In music, the sounds in consecutive order used by various nations in different forms as the material of music. In a proper succession such sounds form melody, in proper combinations they constitute harmony. The modern scale, universally used among the more civilized nations, consists of 12 divisions, called semitones, included in one octave.

Scale Moss, a popular name given to certain plants resembling moss. They grow on the trunks of trees, in damp earth, and in similar places, and are so called from the small scale-like leaves.

Scalene, in mathematics, a term applied to a triangle whose sides are all unequal; also to a cone such that a section made by a plane through the axis perpendicular to the plane of the base is a scalene triangle. In this latter case the term is equivalent to oblique.

Scales, the imbricated plates on the exterior of certain animals, as the pangolins or scaly ant eaters, serpents and other reptiles, and especially fishes.

Scales, Alfred Moore, an American lawyer; born in Reedsville, N. C., Nov. 26, 1827. He was admitted to the bar in 1851. When the Civil War broke out he entered the Confederate army as a private, and was rapidly promoted to the rank of Brigadier-General. After the war he resumed law practice; was a member of Congress in 1875–1885; and was governor of North Carolina in 1884–1888.

Scaliger, Julius Cæsar (originally Della Scala), a celebrated Italian scholar; born near Lago di Garda, Italy, April 23, 1484. He went to France in 1526, and there practised medicine. According to some scholars, "no one of the ancients could be placed above him, and the age in which he lived could not show his equal" in learning and talent. He published an "Oration against Erasmus" (1531), in reply to that scholar's "Ciceronianus"; "Poems," in Latin, filling several volumes; "Comic Meters"; and a variety of dissertations and essays on classical subjects. He died in Agen, France, Oct. 21, 1558.

Scallop, a well-known bivalve, one of those with a single muscle closing the shell. The beautiful coloring of the shells is remarkable even among bivalves. On the margins of the mantle there are hundreds of small sparkling eyes of different degrees of visual efficiency. The scallops are widely distributed in all seas, at depths of 3 to 40 fathoms. About 180 living species are known, and over 400 are recorded as fossils from Carboniferous strata.

Scalp, the term employed to designate the outer covering of the skull or brain case. Except in the fact that hair in both sexes grows more luxuriantly on the scalp than elsewhere, the skin of the scalp differs but slightly from ordinary skin.

Scalping, the act, peculiar to North American Indian warfare, of partly cutting, partly tearing off a piece of the skin of the head, with the hair attached; whether the victim is alive or dead at the time does not affect the operation. The Indians, with whom scalps are the trophies of victory, have always left a long lock or tuft on the scalp as a challenge. Bounties have, in American history, more than once been offered for scalps: in 1724 £100 (about $500) was offered by Massachusetts for Indian scalps; in 1754, during the French and Indian war, a bounty was offered by the French for British scalps, and by the colonies for Indian scalps; in 1755 Massachusetts offered £40 (about $200) for every scalp of a male Indian over 12 years old, and £20 (about $100) for scalps of women and children.

Scanderbeg (properly Iskanderbeg, or Prince Alexander), an Albanian chief whose real name was George Castriota; born in Croia, Albania, in 1403. He was the son of a Christian prince, but was brought up by the Turks and fought for some time for Amurath II. Becoming possessed of the chief city of his country, which the Turks had taken, he turned against them, abjured Mohammedanism, and raised the whole of Epirus in revolt. For 25 years he withstood all the efforts of the Turks to overcome him, defeating them in 22 battles, even when led by the Sultan. Shortly before he died, he was compelled to yield to superior forces. He died in Alessio, Albania, Jan. 17, 1468.

Scandinavia, the ancient name of the region now comprehending the three kingdoms, Denmark, Sweden, and Norway, or Sweden and Norway alone, and still not uncommonly used.

Scansores, an order of birds, popularly known as climbing birds, having the feet provided with four toes, of which two are turned backward and two forward. This conformation of the

foot enables the scansores to climb with unusual facility. Their food consists of insects and fruit; their nests are usually made in the hollows of old trees. The most important families are the cuckoos, the woodpeckers and wry necks, the parrots, the toucans, and the trogons. Not all of this order are actually climbers, and there are climbing birds which do not belong to this order.

Scape, in architecture, the shaft of a column; also, the apophyge of a shaft; also, a botanical term for a flower stalk springing straight from the root, as in the primrose, snowdrop, etc.

Scape Goat, a term applied to one who is made to bear the blame due to another. The idea is drawn from the Jewish ritual, in which a scape goat was a goat designed to 'scape, i. e., escape, as opposed to one killed and offered in sacrifice.

Scapula, in anatomy, one of the two bones, the other being the clavicle, which together form the pectoral arch or shoulder girdle. The scapula constitutes its posterior part.

Scapular, or **Scapulary,** a dress originally worn over their other dress by the monks when at manual labor, but now forming part of the habit of the older religious orders; also a miniature copy of a monk's scapular made of two pieces of cloth, connected by strings, worn by Roman Catholics from motives of devotion. In surgery, a bandage for the shoulder blade.

Scarborough, William Saunders, an American educator; born in Macon, Ga., in 1852 of negro parentage; was graduated at Oberlin College in 1875; was Professor of Classical Greek at Wilberforce University for 19 years and Professor of Hellenistic Greek at the Theological Department of the same institution in 1891–1895. He then returned to the university proper as a Professor of Ancient Languages. He was identified with many learned societies. His publications include "Theory and Functions of the Thematic Vowel in the Greek Verb"; "Our Political Status"; many articles on the Negro question, Negro folklore; etc.

Scarfing, a particular method of uniting two pieces of timber together by the extremities, the end of one being cut or notched so as to fit into the other, making the part where the junction takes place of the same thickness as the rest of the pieces of timber.

Scarification, in surgery, the act of separating the gum from the teeth, in order the better to get at them with an instrument; the act of making a number of incisions in the skin with a lancet or scarificator, for the purpose of letting blood or of drawing off a fluid; the act of making incisions generally.

Scarificator, in surgery, an instrument used in dental surgery in separating the gum from the teeth; also an instrument used in cupping. Also a lancet for scarifying the skin or an engorged membrane.

Scarlatti, Alessandro, an Italian composer, born in 1650, who was the founder of the Neapolitan school of music, in which most of the composers of the 18th century were trained. Scarlatti originated the overture. He is said to have written 200 masses, 100 operas, and 3,000 cantatas. His writings, though they produced a revolution in the style of operatic music, are almost all completely forgotten. He died in Naples, Oct. 24, 1725. His son Domenico (1683–1757) was considered the greatest harpsichord player (pianist) of his time.

Scarlet, a beautiful bright red color, brighter than crimson. The finest scarlet dye is obtained from cochineal.

Scarlet Bean, or **Scarlet Runner,** a twining plant, a native of Mexico, cultivated as a green vegetable or as an ornamental plant.

Scarlet Fever, or **Scarlatina,** a contagious febrile disease almost always attended during a part of its course by a rash and by sore throat.

Scepticism, that negative system of philosophy which, by doubting of everything beyond the region of phenomena, doubts the possibility of all speculation; or, according to Sextus Empiricus, "the power of opposing, in all their contradiction, the sensuous representations and the conceptions of the mind, and thus to induce perfect suspension of judgment." The sceptic, in general, accepts of the phenomena of nature as he finds them, and, con-

vinced of the impossibility of diving beneath the appearances to the real causes of things, contents himself with a spirit of doubt and indifference. The most celebrated thinkers of this class in ancient times were Pyrrho, Timon, Œnesidemus, and Sextus Empiricus; in modern times, David Hume. The scepticism of Hume is, beyond all doubt, the most thorough and wide-reaching that philosophy has yet witnessed. He starts with the popular theory of experience, and proceeds with surprising coolness to hew down every intelligent principle for which his theory was incapable of accounting. In open argument, in candid statement, and in solid attack, the Scotch sceptic is greatly in advance of his Greek predecessors. His scepticism called forth a host of assailants, and has more or less influenced philosophical thought and opinion since his time.

Scepter, a staff or baton borne by a sovereign or ruler as a symbol of office or authority; the ensign of royalty borne in the hand. The English scepter is cruciform.

Schaeberle, John Martin, an American astronomer; born in Germany in 1853; was graduated at the University of Michigan in 1876. He was acting Professor of Astronomy at that institution in 1878–1888 and astronomer of Lick Observatory, Mt. Hamilton, in 1888–1898. He had charge of the eclipse expedition of Lick Observatory to Cayenne and Chile in 1889 and 1893, and to Japan in 1896. He discovered three comets, one with a telescope made by himself, and carried on considerable other original investigation. He was a frequent contributor to astronomical periodicals.

Schaeffer, Nathan C., an American educator; born in Berks co., Pa., Feb. 3, 1849; was graduated at Franklin and Marshall College. In 1893 he was made State Superintendent of Public Instruction of Pennsylvania. He became editor of the "Pennsylvania School Journal" in 1893.

Schaff, Philip, an American clergyman; born in Coire, Switzerland, Jan. 1, 1819. After 1870 he was Professor of Sacred Literature in Union Theological Seminary, New York. He was a prolific writer. He was president of the American Committee on Bible Revision in 1871. He died in New York city, Oct. 20, 1893.

Schamyl, a Caucasian chief; born in Northern Daghestan in 1797. In 1824 he joined in the struggle which then broke out against the Russians. He was ultimately elected chief and continued to resist the Russian power until 1859, when he was captured and taken to St. Petersburg. He was assigned a residence at Kaluga in the middle of Russia, with a pension of $5,000, and he died in Medina, Arabia, in March, 1871, having taken up his residence in Mecca the year previously. In faith he was a Sufi.

Scharnhorst, Gerhard Johann David von, a Prussian military officer; born in Bordenau, Hanover, Nov. 12, 1756. In 1807 he was put at the head of the commission for reorganizing the armies of Prussia. He reformed the army, introduced the short service system, created a better spirit among both officers and men, and so converted what had been a mercenary force into a national army. Scharnhorst was wounded at Grossgorschen while acting as chief of the staff of the Silesian army, and died in Prague, Bohemia, June 28, 1813.

Scheele, Karl Wilhelm, a Swedish chemist; born in Stralsund, Sweden, Dec. 19, 1742. To him we owe the discovery of fluorine, chlorine, and of molybdic, tungstic, arsenic, lactic, gallic, tartaric, oxalic, citric, malic, purpuric, and saclactic acids, glycerine, and oxygen. He ascertained the nature and the constituents of ammonia and prussic acid, the characters of barytes and manganese, and the elements of the atmosphere. Few men of his century, with the exception of Priestley, can be compared with him as a discoverer. He died May 21, 1786.

Scheffer, Emil, an American chemist; born about 1812. In 1870 he discovered the formula for making liquid pepsin, and two years later one for making the dry or powdered form of pepsin, which created much interest in medical and chemical circles. He died in Louisville, Ky., Jan. 22, 1902.

Schelling, Friedrich Wilhelm Joseph von, a German philosopher; born in Leonberg, Wurtemberg, Jan. 27, 1775. He was the last survivor of

that famous band of German philosophers of which Kant, Jacobi, Herbart, Fichte, and Hegel are the other chiefs. By the nature of his speculations, developed in a number of fragmentary publications, chiefly in the earlier part of his life, Schelling's place in the great series of German philosophers is determined to be between Fichte and Hegel. His metaphysical theory is generally known by the name of the "System of Identity." It rests on the principle that the two elements of thought, the objects respectively of understanding and reason, called by the various terms of matter and spirit, objective and subjective, real and ideal, etc., are only relatively opposed to one another as different forms of the absolute or infinite, hence sometimes called the two poles of the absolute. He died in Ragatz, Switzerland, Aug. 20, 1854.

Schenck, Robert Cumming, an American diplomatist; born in Franklin, O., Oct. 4, 1809. At the outbreak of the Civil War he was appointed a Brigadier-General of volunteers. After performing effective services in the Gettysburg campaign he resigned his commission in 1863 to take his place in the National House of Representatives. He was reëlected to Congress in 1866 and 1868, and on Dec. 22, 1870, was appointed minister to Great Britain, but resigned in 1876, in consequence of the failure of the Emma Silver Mine Company in which he was director. He died in Washington, D. C., March 23, 1890.

Scheppegrell, William, an American physician; born in Hanover, Germany, Sept. 22, 1860. He invented numerous appliances for treating the ear, nose, and throat. In 1899 he was elected chairman of the board of curators of the Elliott Society of Science and Arts. He became identified with various medical societies in the United States and Europe. His publications include "Electricity in Diseases of the Nose, Throat, and Ear," and articles in medical and scientific periodicals.

Schiavone, Andrea, an Italian painter; true name, Medola; born in Sebenico, Dalmatia, in 1522. He studied under Titian, who employed him in the library of St. Mark, where he is said to have painted three entire ceilings. Two of his compositions are in the church of the Padri Teatini at Rimini, and his "Perseus and Andromeda," and the "Apostles at the Sepulcher," are in the royal collection at Windsor, England. He died in 1582.

Schiller, Johann Christoph Friedrich von, a German poet; born in Marbach, Wurtemberg, Nov. 10, 1759. After having studied medicine and become surgeon in a regiment, he, in his 22d year, wrote the tragedy of "The Robbers," which at once raised him to the foremost rank among the dramatists of his country. It was performed at Mannheim in 1782. But some passages of a revolutionary tendency having incurred the displeasure of the Duke of Wurtemberg, Schiller left Stuttgart by stealth and made his way to Mannheim, where, after various wanderings and many hardships, he got his tragedy of "Fiesco" brought out on the stage. In 1789 he was appointed to the chair of history in the University of Jena, and besides lecturing to crowded audiences he published his "History of the Thirty Years' War" and engaged in various literary enterprises which had great influence on the literature of Germany. About 1790 he exhibited a strong tendency to consumption, which, by precluding him from lecturing, greatly reduced his income; but he was relieved from the pressure of misfortune by the kindness of the Prince of Denmark, who settled on him a pension of $1,000 for three years, and thus enabled him to pursue his studies free at once from narrow circumstances and public duties. He soon after settled at Weimar, in order to direct the theater in conjunction with Goethe; and here at intervals he published the following works: "Wallenstein," "Mary Stuart," "Joan of Arc," and "William Tell." He died in Weimar, Germany, May 9, 1805.

Schilling, Johann, a German sculptor; born in Mittweida, Saxony, June 23, 1828; studied art at Berlin and Dresden. In 1868 he became professor at the Dresden Royal Academy. His chief works include the "Four Seasons" at Dresden; Schiller statue at Vienna; Maximilian's statue at Trieste; War Memorial at Hamburg; the German National Monument on the Niederwald, opposite Bingen on

the Rhine, with a colossal figure of Germania; and the statue of the Emperor William I. at Wiesbaden (1894).

Schism, an ecclesiastical division in a Church or separation from a Church; as also the tendency to promote such division. The Great Schism or Greek Schism is the separation of the Greek Church from the Latin.

Schist, a term used for rocks consisting of mineral ingredients arranged so as to impart a more or less laminar structure, that may be broken into slabs or slaty fragments. Such are mica schists, chlorite schists, etc.

Schlegel, August Wilhelm von, a German author; born in Hanover, Prussia, Sept. 8, 1767. He was Professor of Literature in the University of Bonn. His most notable works in literary and art criticism are: "Lectures on Dramatic Art and Literature" (3 vols. 1809–1811), translated into nearly all the languages of Western Europe. He translated many of the plays of Shakespeare and made the English dramatist a German classic. He translated Dante, Calderon, Camoens, and other foreign masters of literature. He wrote sonnets, an elegy, "Rome" (1812), and other poems. He died in Bonn, Germany, May 12, 1845.

Schlegel, Friedrich von, a German philologist; born in Hanover, Prussia, March 10, 1772. He first devoted himself to the study of Greek antiquity, and in 1794 published his great essay "On the Schools of Grecian Poetry"; following it with many others of a like tenor. In his "Fragments," he essayed to establish the theory of a new romanticism. His work "Language and Wisdom of the Indians" (1808) was a valuable contribution to the science of language. He died in Dresden, Saxony, Jan. 12, 1829.

Schley, Winfield Scott, an American naval officer; born in Frederic co., Md., Oct. 9, 1839. He entered the United States Naval Academy in 1854, and began his seafaring experience by making the voyage to Japan on board the United States vessel which escorted the Japanese embassy home in 1860. He remained abroad till the Civil War, when he secured the first prize ship of the war, the "General Parkhill." At the close of the Civil War he was ordered to the Pacific coast, where he performed various missions of a perilous character, being present at the bombardment of Valparaiso and Callao by the Spanish fleet, and during the same cruise he suppressed insurrections at both Middle Chincha Island and La Union, Honduras. Equal in importance to these services in time of war was his voluntary command of the expedition for the rescue of Greely from the desolate shore of Cape Sabine in 1884. The marvelously short period in which this dash into the kingdom of the frost king was accomplished and the starving victims snatched back to their homes and civilization form a bright testimonial to his skill and daring. At the beginning of the Spanish-American War he had attained the rank of commodore, and was chairman of the Lighthouse Board, to which office he was elected by unanimous vote of the board on April 15, 1897. In anticipation of the war with Spain, Commodore Schley was, on March 25, 1898, placed in command of the "Flying Squadron" at Hampton Roads, comprising the armored cruiser "Brooklyn," the battleships "Massachusetts" and "Texas," the dispatch boat "Scorpion," and a collier. On May 13, under sealed orders, he steamed out to sea, presumably for the purpose of intercepting and destroying the Spanish fleet under Admiral Cervera, which was reported to be on its way from the Cape Verde Islands to Cuban waters. Disregarding various misleading reports sent out from Madrid as to the movements of the Spanish fleet, Commodore Schley divined the probable course the Spanish admiral would take, and on May 28 arrived off the harbor of Santiago de Cuba, in which the Spanish fleet had taken refuge, and by blockading the entrance prevented its escape. His squadron was united with Rear-Admiral Sampson's fleet on June 30, and on July 3 the combined fleet, under the personal direction of Commodore Schley, attacked and totally destroyed the Spanish fleet while endeavoring to escape from the harbor. In August, 1898, he was promoted rear-admiral. Owing to the absence of Rear-Admiral Sampson, Schley's ranking officer, from the actual battle of Santiago, a controversy arose between

friends of the two officers as to om the credit for the victory be- ged. Of this discussion neither hley or Sampson, personally, took y notice till the publication of a rk by Edgar Stanton Maclay, en- ed "History of the United States vy." In the third volume of this rk, Maclay referred to Commodore hley as a "caitiff, poltroon, and vard." The proofs of the book had n read and approved by various val officers, among them Rear-Ad- ral Sampson; and on July 22, 1901, hley applied to the Secretary of the vy for the appointment of a court inquiry into his conduct. This re- est was granted on July 24. The irt was convened Sept. 12, and its sions lasted exactly one month. It sisted of Admiral Dewey, president, l Rear-Admiral Benham and Ram- . The verdict, returned Dec. 14, 01, was a disagreement; Admiral wey refusing to subscribe to the sures on Schley's conduct which re made by the two other members. e majority report found Schley lty of vacillation, lack of enterprise, l disobedience; while Dewey's re- t praised Schley for promptness l efficient service, and gave him the dit for the destruction of Cervera's t. Schley filed with the Secretary the Navy objections to the majority ort, but it was nevertheless ap- ved by Secretary Long, Dec. 20, 01. In January, 1902, Rear-Ad- al Schley appealed from the ver- t to the President, who, however, firmed Secretary Long's approval.

chmidt, Nathaniel, an Amer- n educator; born in Hudiksvall, eden, May 22, 1862; settled in the ited States and was Professor of nitic Languages and Literature at gate University in 1888–1896. In latter year he accepted a similar ir at Cornell University.

chmalkald, League of, a de- sive alliance concluded at Schmal- den, April 4, 1531, between nine otestant princes and 11 imperial es, with whom other princes and perial cities subsequently made com- n cause. The Elector of Saxony l the Landgrave of Hesse were ap- nted chiefs of the league. The ob- of this formidable alliance, which luded nearly all the Protestant States from Denmark to Switzerland, was the common defense of the religion and political freedom of the Protestants against the Emperor Charles V. and the Catholic States. The confederation was consolidated by the "Articles of Schmalkald," drawn up by Luther at Wittenberg in 1536. A conflict was of course inevitable. In the war of Schmalkald that ensued (1546) and in the battle of Muhlberg (April 24, 1547) the Elector of Saxony, Philip of Hesse, and other Protestant chiefs were taken prisoners and their army routed. This caused the league to break up.

Schneider, Albert, an American botanist; born in Granville, Ill., April 13, 1863. In 1897 he was made Professor of Botany, Pharmacognosy and Materia Medica in the School of Pharmacy, Northwestern University, Chicago. His publications include many works on science.

Schneider, George, an American journalist; born in Pirmasens, Rhenish Bavaria, Dec. 13, 1823; engaged in journalism there, but was forced to flee the country owing to his participation in the revolution of 1848–1849. In the latter year he settled in St. Louis, Mo., where he founded the "Unsere Zeit," the first abolitionist paper in the State; removed to Chicago in 1851 and there founded the "Daily Staats-Zeitung"; was made United States commissioner for Germany and the Northern countries of Europe and consul to Denmark in 1861 to influence public opinion toward the Federal government, and also to negotiate loans for the United States. In 1862–1866 he was collector of internal revenue; in 1871–1897 was president of the National Bank of Illinois; and in 1892–1893, a director of the World's Columbian Exposition.

Schnitzer, Edward, better known as Emin Pasha, an African explorer; born in Oppeln, Germany, March 28, 1840. In 1878 he was appointed by Gordon Pasha governor of the Equatorial Province. He showed himself an enlightened ruler and a bitter foe to slavery. He added greatly to the anthropological knowledge of Central Africa and published valuable geographical papers. He entered the Ger-

man service, 1889, and commanded an expedition to Central Africa. He was murdered by Arab slave traders in the Kongo Free State, Oct. 20, 1892.

Schnorr von Carolsfeld, Baron Julius, a German painter; born in Leipsic, Germany, March 26, 1794. In 1846 he accepted the appointment of professor at the Fine Art Academy in Dresden, coupled with the directorship of the Royal Picture Gallery. Schnorr's designs for 180 pictures to illustrate the narratives of the Bible are accounted by many authorities the best things he did. His skill as a draughtsman and designer are further exhibited in stained glass windows in St. Paul's Cathedral, London, and in Glasgow Cathedral. He died in Dresden, May 24, 1872.

Schoenborn, August, an American architect; born in Germany about 1822. He rendered valuable service during the Civil War in preparing maps and plans for General McDowell, as well as for forts, barracks, hospitals, and other buildings for the quartermaster-general. He was best known for his plans for the dome of the Capitol. He died in Washington, D. C., Jan. 25, 1902.

Schofield, John McAllister, an American military officer; born in Gerry, N. Y., Sept. 29, 1831; was graduated at the United States Military Academy in 1853. During the Civil War he served in the Missouri campaign under General Lyon; commanded the Department of the Ohio; took part in the Atlanta campaign; and commanded at the battle of Franklin, Tenn., Nov. 30, 1864, for which he was made Brigadier-General and brevet Major-General in the regular army. After the war he became commander of the Division of the Pacific; was Secretary of War in 1868–1869; commanded the army of the United States as senior Major-General; and was promoted Lieutenant-General (a grade created for him) and was retired in 1895. He was the author of "Forty-six Years in the Army" (1897).

Scholarship, a name given in the universities of Oxford and Cambridge, England, to foundations for maintaining scholars. A scholarship is, like a fellowship, subject to certain regulations and conditions; is inferior to the latter, but superior to an exhibition. In the United States most of the colleges have endowed scholarships. In some cases the power of appointment is vested in certain college officers, and in others the scholarship is won by competitive examinations.

Scholasticism, in philosophy and Church history, the name given to a movement which began with the opening of cloister schools by Charlemagne (742–814), attained its greatest development in the early part of the 13th century under Aquinas and Scotus, and gradually subsided at the Renaissance. Scholasticism was the reproduction of ancient philosophy under the control of ecclesiastical discipline, the former being accommodated to the latter in case of any discrepancy between them.

Schomburgk, Sir Robert Hermann, a Prussian traveler; born in Freiburg, Prussian Saxony, June 5, 1804. He was trained for the mercantile profession and came to the United States in 1829; but in the following year he removed to Anegada, one of the Virgin Isles. In 1840 he returned to Guiana to survey the colony for the government, and to draw the long controverted "Schomburgk line" as a provisional boundary with Venezuela and Brazil. He was knighted. He died in Schoneberg, near Berlin, March 11, 1865. His boundary line was the subject of much argument in the British-Venezuelan arbitration tribunal in 1897.

Schoolcraft Henry Rowe, an American author, noted as an Indian authority; born in Albany co., N. Y., March 28, 1793. Thirty years of his life he spent among the Indians, and through him many laws were enacted for their protection. Among his numerous publications are: "Travels in the Central Portions of the Mississippi Valley," "The Indian and His Wigwam," etc. He died in Washington, D. C., Dec. 10, 1864.

School, a place, house, or establishment where instruction is given in arts, sciences, languages, or any other branch of learning; a place of education and training in mental or mechanical arts. Also the pupils col-

ectively in any place of instruction, nd under the discipline and direction f one or more teachers.

Very early in the settlement of the Inited States the cause of education eceived a great share of the public ttention, and schools of almost every rade were established for the educa- on of the young and for fitting older udents for various professions. The rst noted foundation in this connec- on was Harvard College, which be- an its existence in 1636, under pa- ronage of the Rev. John Harvard. or 57 years this institution was with- ut a rival.

From this time onward, despite the roublous times of the Revolution, the ncrease in the number of higher hools was rapid and steady, and to- ay there is not a State in the Union hich is not liberally supplied with cilities for its people acquiring gher education. The idea of public hools maintained by the States was so of early date, and in the Northern nd Anti-Slavery States was put into ractice.

In the United States any primary hool conducted under the auspices supervision of any religious de- omination is termed a parochial hool.

School Board, in the United tates, a committee of citizens elected take charge of the public schools in y district, town, or city and to con- ol the money appropriated for school rposes.

School Savings Banks, a system r encouraging school children in ving their money. It was intro- uced in the United States by John . Thiry, of what was then Long land City, N. Y., in 1885, being mod- ed by him from the methods in use the schools of England, France, ermany, Italy, and Belgium.

The method of depositing is simple. eachers devote 10 minutes each Mon- y morning to the collection of the ms, from one cent upward, which upils have saved for the bank. When boy or girl has a dollar to his credit gets a bank book free. On the last onday of each month the teacher posits the collections in a chosen vings institution, and there they are ly credited to the several depositors, ms of $2 and upward bearing in- terest. The pupil can only draw on his account by signing a check, which must also bear the signed approval of his parent or guardian and teacher.

The pronounced success of the sys- tem of school savings banks has been widely remarked in the public press and by prominent educators and com- missioners of education. It was de- signed not only to stimulate the ac- cumulation of capital on the part of the children who should take an inter- est in it, but to build up habits of fru- gality and self-denial in them, to di- vert their spending money from foolish or injurious to practical channels, and to give them sound ideas of the value of money.

According to the statistics of the system for the year 1898–1899, as com- piled by Mr. Thiry, the father of the system in this country, savings banks were then maintained in 351 schools in 89 cities of the United States. Dur- ing the year $649,247.01 was deposited in the banks and $441,825.83 was withdrawn, leaving a balance due the little depositors of $207,421.18. Mr. Thiry's report showed that the system was rapidly being extended.

Schooner, a two or three-masted vessel whose sails are of the fore-and- aft class — i. e., extended on booms. The masts have but one splice, the topgallant, if any, forming part of the topmast stick. When a schooner has none but fore-and-aft sails, she is termed a fore-and-aft schooner; if carrying a square foretopsail and fore- topgallant sail, a topsail schooner. This latter rig, formerly common, has now become rare. Square-rigged ves- sels have also lower fore-and-aft sails, denominated spencers or trysails, but these are small and are brailed up to the gaff when furled, instead of being lowered like those of a schooner.

The first seven-masted schooner ever constructed, the "Thomas W. Law- son," was launched in Boston, July 10, 1902.

Schopenhauer, Arthur, a Ger- man philosopher; born in Danzic, Feb. 22, 1788. The principal work of Schopenhauer is entitled "The World as Will and Idea." It appeared in 1819, and after being neglected for many years attracted a good deal of attention and received some sharp blows of criticism. The practical up-

shot of his system, which makes will the one sole reality, is intolerably melancholy, taking from man all that constitutes his greatness, his goodness, or his bliss. God — futurity — the soul — mere names, illusions; and the world of men is to him bad, hopelessly bad, and made so. Schopenhauer published several other works of philosophy, of which the most important is "The Two Sound Problems of Ethics." He died in Frankfort-on-the-Main, Sept. 21, 1860.

Schott, Charles Anthony, an American scientist; born in Mannheim, Germany, Aug. 7, 1826; was graduated at the Polytechnic School in Carlsruhe; settled in the United States in 1848, and became connected with the United States Coast and Geodetic Survey; was made assistant of that survey in 1856; was sent to the International Conference on Terrestrial Magnetism, Bristol, England, in 1898; became identified with numerous scientific and philosophical societies. His publications include articles on tides, hydrography, terrestrial magnetism, physics,meteorology. Died 1901.

Schottische, a quick kind of dance, performed by two persons, and danced in common time; may be described briefly as a combination of the polka and mazourka. In music, a piece of music set in appropriate time to the steps of such a dance.

Schouler, John, an American naval officer; born in Lowell, Mass., Nov. 30, 1846; was graduated at the United States Naval Academy in 1864; was chief of staff of the North Atlantic Squadron in 1895–1897; and was afterward assigned to special duty in the Bureau of Navigation. He was retired as rear-admiral November, 1899.

Schrader, Frank Charles, an American geologist; born in Sterling, Ill., Oct. 6, 1860; was graduated at the University of Kansas; was an instructor of geology at Harvard University in 1895–1896. In the latter year he became connected with the United States Geological Survey; was assistant geologist in an expedition to Yukon, Alaska, in 1896, in one to Idaho and Arizona in 1897; etc. In 1901 he had charge of the geological work in the expedition to the Arctic coast of Alaska.

Schrader, Frederick Franklin, an American journalist; born in Hamburg, Germany, Oct. 27, 1857; settled in the United States with his parents in 1869; was the Washington correspondent of the St. Louis "Globe-Democrat" in 1891–1894, and political writer for the Washington "Post" in 1894–1896. In the latter year he became correspondent of a syndicate of Western papers.

Schroeder, Seaton, an American naval officer; born in Washington, D. C., Aug. 17, 1849; was graduated at the United States Naval Academy in 1868. Subsequently he served in the Hydrographic Office; was detailed to special duty in the Mediterranean; attached to the Fish Commission steamer "Albatross"; etc. He was assigned to the battleship "Massachusetts" in 1896 and served on that vessel through the Spanish-American War; was made secretary of the Naval Inspection Board; and in 1900 was appointed governor of the island of Guam.

Schubert, Franz Peter, an Austrian composer; born in Vienna, Austria, Jan. 31, 1797. The number and variety of his compositions is extraordinary. The most admired is his "Songs," and among them "The Erl King" and "Ave Maria," are perhaps the best known. But he wrote also operas, sonatas, symphonies, overtures, cantatas, six masses, etc. He left numerous works unpublished at the time of his death. Schubert spent almost his whole life at Vienna, and died there Nov. 19, 1828.

Schumann, Robert, a German musical composer; born in Zwickau in the kingdom of Saxony, June 8, 1810. The celebrated pianiste, Clara Wieck, became his wife in 1840. In the year following his marriage he published nearly 150 songs, many on Heine's words, and all marking an advance on previous composers in the fidelity and subtilty with which they reproduced the most delicate shades of meaning in the poems selected for musical treatment. He then commenced his great series of orchestral works, his symphony in B flat being first performed at the close of 1841. Under stress of work, however, his reason failed him, and after an attempt to drown himself

1854 he was confined in a lunatic ylum, where he died July 29, 1856.

Schurman, Jacob Gould, an nerican educator; born in Free- wn, Prince Edward's Island, May , 1854. He won the Gilchrist Do- nion scholarship, 1875; was grad- ted at London University, 1877; s Professor of Philosophy in Aca- a College, 1880–1882; in Dalhousie llege, Halifax, 1882–1886. He be- me Professor of Philosophy at Cor- ll University, and president in 1892. 1899 he was appointed president the first Philippine Commission. He s published: "Kantian Ethics," The Ethical Import of Darwinism," Agnosticism and Religion," "A Gen- ation of Cornell," and "Report of e Philippine Commission." He was o editor of the "Philosophical Re- ew."

Schurz, Carl, an American states- n; born in Sibhar, near Cologne, ussia, March 2, 1829; he was a dent at Bonn in 1847–1848. In the rly part of 1849 he participated in revolutionary movements in the latinate and at Baden, and on the feat of the insurrection fled to Switz- and to escape arrest. About 1852 came to the United States, and tled in Madison, Wis. In 1861 he s appointed minister to Spain, but en the Civil War broke out he re- ned that he might return and join Union army. He took part in the ond battle of Bull Run, and com- nded a division at Chancellorsville, y, 1863, and a corps at Gettys- rg, July 1–3 of that year. He re- ned from the army in 1865, and in 69 was elected United States Sena- from Missouri. He was Secretary the Interior under President Hayes m 1877 to 1881. In 1881–1884 he s editor of the New York "Evening st," and was conspicuous in the Mugwump" movement of 1884. In 92 he became president of the Na- nal Civil Service Reform League. afterward wrote several books, ong them a "Life of Henry Clay."

Schussele, Christian, an Amer- n artist; born in Guebvillers, Al- e, April 16, 1824. He settled in United States in 1848, and en- ed in chromo-lithography; later he oted most of his time to painting; and was Professor of Painting and Drawing in the Pennsylvania Acad- emy in 1868–1879. He died in Mer- chantville, N. J., Aug. 20, 1879.

Schuyler, Eugene, an American diplomatist; born in Ithaca, N. Y., Feb. 26, 1840; was graduated at Yale University in 1859 and at the Law School of Columbia University in 1863. He was United States consul at Moscow in 1866–1869, and consul- general at Cairo, Egypt, in 1899–1890. He made a remarkable tour through Turkestan, Khokan, and Bok- hara; investigated the Turkish massa- cres in Bulgaria; and was authorized to conclude the commercial treaties with Servia and Rumania. On his return to the United States in 1884, he engaged in literary work and pub- lished: "Peter the Great, Emperor of Russia," "American Diplomacy and the Furtherance of Commerce," etc. He died in Cairo, Egypt, July 18, 1890.

Schuyler, Philip, an American military officer; born in Albany, N. Y., in November, 1733. He was Federal- ist United States Senator from New York in 1789–1791, and was again elected a Senator, in place of Aaron Burr, in 1797. One of his daughters was the wife of Alexander Hamilton. He died in Albany, Nov. 18, 1804.

Schuylkill, a river of Pennsyl- vania, which rises in the N. side of the Blue Mountains, runs S. E., passes through the confines of Philadelphia, and unites with the Delaware 5 miles below that city. It is 120 miles long, and navigable for boats of 300 or 400 tons to Philadelphia.

Schwab, Charles M., an Amer- ican manufacturer; born in Williams- burg, Pa., April 18, 1862. At the age of 18 he went to work for the Edgar Thomson Steel Works and rose rap- idly. He was superintendent, first of the Edgar Thomson, and afterward of the Homestead Steel Works, and took management of both in 1892. When the United States Steel Corporation was organized Mr. Schwab was chosen President, and resigned in 1903, on ac- count of ill health.

Schwabach, Articles of, a con- fession of faith drawn up by Luther for the princes and cities assembled in 1529 at Schwabach. The cities of

Southern Germany, inclining to the Swiss doctrine, refused to subscribe, and these articles, adopted by the Schmalkaldic League, became thus a chief obstacle to a union between the party of Luther and Zwingli.

Schwan, Theodore, an American military officer; born in Germany, July 9, 1841, came to the United States and enlisted as a private in the regular army in 1857; served creditably during the Civil War; was promoted 1st lieutenant in 1864, and brevetted major for gallant and meritorious services in 1867. In 1898 he was appointed a Brigadier-General of volunteers, and won distinction in the Philippines, where he captured Cavite, Viejo, San Cruz and other places in the province of Cavite. He was promoted Brigadier-General, U. S. A., in February, 1901.

Schwanthaler, Ludwig Michael, a German sculptor; born in Munich, Aug. 26, 1802. In 1835 he was appointed professor at the Munich Academy. The number of his works is singularly great, while their excellence places him in the first rank of German sculptors. He died Nov. 28, 1848, leaving his models to the nation.

Schwartz, Berthold, a monk of the order of Cordeliers, at the end of the 13th century, was a native of Fribourg, in Germany, and an able chemist. It is said that as he was making some experiments with niter he was led to his invention of gunpowder, which was first applied to warlike purposes by the Venetians in 1300. There is, however, much discrepancy in the accounts of this discovery; and it is certain that Roger Bacon, who died in 1292, was acquainted with an inflammable composition similar to gunpowder.

Schwatka, Frederick, an American Arctic explorer; born in Galena, Ill., Sept. 29, 1849; was graduated at the United States Military Academy in 1871, and served as a lieutenant of cavalry on the frontier till 1877, meanwhile being also admitted to the Nebraska bar and taking a medical degree in New York. After exploring the course of the Yukon in Alaska, in 1884 he resigned his commission. In 1886 he commanded the New York "Times" Alaskan expedition, and ascended Mount St. Elias to a height of 7,200 feet; in 1891 he led another party to Alaska which opened up some 700 miles of new country in the same quarter. He published "Along Alaska's Great River," "The Children of the Cold," etc. He died in Portland, Or., Nov. 2, 1892.

Schweinitz, Lewis Davis von, an American botanist; born in Bethlehem, Pa., Feb. 13, 1780; was educated in Germany in 1798–1812; spent all his time from childhood in the study of botany. His original researches resulted in an addition of over 1,400 new species to the catalogue of American flora. Of these more than 1,200 were fungi, which prior to his time had been little studied. He bequeathed his large and valuable collection of plants to the Academy of Natural Science of Philadelphia. He died in Bethlehem, Pa., Feb. 8, 1834.

Sciatica, acute pain produced by neuralgia following the course of the great sciatic nerve, generally in only one limb.

Science, in its widest significance, the correlation of all knowledge. A term applied to the generalized and systematized divisions of knowledge. It includes mathematics, physics, chemistry, zoölogy, etc. To know a truth in its relation to other truths is to know it scientifically.

Scilly Islands, a group of islands belonging to Cornwall, England; about 27 miles W. S. W. of Land's End. They occupy about 30 square miles of sea room, and consist of six large islands — St. Mary's (1,528 acres), Tresco (697 acres), St. Martin's (515 acres), St. Agnes (313 acres), Bryher (269 acres), and Samson (78 acres) — and some 30 small ones, besides innumerable rocks and ledges, of which about 100 are named. They are composed entirely of a coarse type of granite, a continuation of that running through Devon and Cornwall.

Farming is practised, and early potatoes and broccoli are exported; but the principal industry now is the cultivation of narcissus and other lilies — 100 tons of flowers being shipped in a single spring. In May and June, during the mackerel fishing, there is one steamer (often two) daily with cargoes of sometimes over 100,000 fish.

olitically the islands belong to the t. Ives division of Cornwall.

Scintillation, a twinkling of the ars; a familiar phenomenon to all ho have directed their attention to ıe firmament above us. Under or- nary atmospheric conditions this ıckering is possessed only by the so- alled fixed stars. A planet shines eadily and by this mark can readily e picked out. When near the horizon, owever, planets have been observed scintillate slightly, while stars at w altitudes invariably twinkle ore vigorously than stars over- ead. Scintillation may be said to de- end on three factors: (1) The vast stance even of the nearest stars re- ucing the largest of them to mere oints of light. (2) The ever-chang- g variableness in condition of the tmosphere through which the light ust come to us. (3) The smallness f aperture of our eye, which receives n almost ideal single ray of light.

Scipio, Æmilianus Africanus (The Younger), Publius Cornelius, onqueror of Carthage; born about c. 185. He was the youngest son Æmilius Paulus, and the adopted on of Publius Scipio, son of Afri- anus the elder. He began his mili- ry service in Spain in 151; gained eat reputation soon after in Africa, the third Punic War; and in 148, ough not of fit age, was chosen con- l. The next year, accompanied by olybius and C. Lælius, he went to frica, and at once commenced the ege of Carthage, which was heroical- defended. It was entered by the omans in the spring of 146; and at st a fire broke out that raged nearly week. Scipio mused mournfully over ese horrors, and foreboded like ruin r Rome. Scipio had a magnificent iumph on his return. He led a sim- e and frugal life, and during his nsorship, 142–141, tried to effect re- rms in the manners of his country- en, but without success. By his bold sistance to the proposed reforms he st the favor of the popular party; id at last, in 129, he was found dead his bed. Suspicion of murder fell n various persons, but chiefly on Car- , one of the most rash advocates of e Agrarian reforms.

Scipio, Africanus (The Elder), ublius Cornelius, one of the greatest of the Romans, born B. C. 234. At the age of 24 he was chosen to command, as pro-consul, in Spain, where, instead of risking a battle with the superior forces of the Carthaginians, he laid siege to the city of Carthago Nova and took it the same year. In 206 he returned to Rome and was chosen consul for the next year. Sicily was given to him as his province, and having attracted by his character and success an army of volunteers, he crossed, in 204, into Africa. Hannibal was called to oppose Scipio in Africa, and the Second Punic War was terminated by the total defeat of Hannibal at the battle of Zama, Oct. 19, 202. Peace was signed the next year, and Scipio, on his return home, had the most splendid triumph which had yet been seen, and received the surname Africanus. He declined other honors which were offered him; was subsequently censor, consul a second time, and in 193 ambassador to Antiochus, King of Syria, at whose court he is said to have met Hannibal. Having accompanied his brother Lucius to the Syrian war as lieutenant in 190, they were accused of misappropriation of moneys received from Antiochus. Cato was the leader of the party opposed to Scipio, and the prosecution of Lucius was successful, but that of Africanus was dropped by the advice of Tiberius Gracchus. The popularity of Scipio had waned, and he left Rome never to return. He died at his villa, in Liternum, 183 B. C., the same year in which Hannibal died.

Scirpus, a genus of plants of the order Cyperaceæ, commonly called club rushes, and the common bulrush of ponds and sluggish streams is a familiar example. The species of this genus, about 300, are universally diffused, though found chiefly in temperate climates.

Scissors and Shears, implements for cutting various substances.

Scissor Bill, or **Skimmer,** the popular name of a long-winged marine bird closely allied to the Terns, but easily distinguished by their singular bill, which is compressed like a knife, and has the lower mandible longer than the upper, and broken off, as it were, at the tip. The American species, the black skimmer, is 19 inches long; wing

14. It skims its food from the surface of the water.

Scollard, Clinton, an American poet; born in Clinton, N. Y., Sept. 18, 1861. In 1888 he was made assistant Professor of Rhetoric at Hamilton College, and later Professor of English Literature, resigning in 1896 to devote himself to literature.

Scombridæ, in ichthyology, mackerel; a family of fishes, from all seas of the tropical and temperate zones. They are fishes of prey, and move about in shoals, approaching the shore in pursuit of other fishes on which they feed.

Scone, a parish in Perthshire, Scotland, lying on the left bank of the Tay. It is famous as the seat of one of the most venerable of Scotch abbeys. Scone is first mentioned in the beginning of the 10th century, when a council was held there in the sixth year of the reign of King Constantine. A monastery was built at Scone probably about the same period, and there was located the famous stone on which the kings of Scotland were inaugurated, and which was carried by Edward I. of England to Westminster Abbey. Alexander III., the last of the ancient race of kings, and Robert Bruce, the founder of the new dynasty, were crowned at Scone, but after the accession of the House of Stuart the coronation sometimes took place in other churches. The last coronation which was celebrated here was that of Charles II., in 1651.

Scopas, an ancient Greek sculptor, founder of the later Attic school; a native of the island of Paros, and flourished during the first half of the 4th century B. C. One of his earliest works was the temple of Athena Alea at Tegea in Arcadia, on the site of a previous one burned down in 395 B. C. Some 15 years or so later he settled in Athens, where for more than a quarter of a century he labored at his profession. Toward the end of his life he was associated with Leochares and others in preparing sculpture for the great mausoleum of Halicarnassus in Asia Minor. He excelled in statues of single gods and goddesses.

Score, in music, compositions for several voices or instruments, or for an orchestra, so written that each part has a separate staff for itself, these staves being placed over each other, bar corresponding for bar.

Scoresby, William, an English Arctic explorer; born in Cropton, near Whitby, Oct. 5, 1789; commenced a seafaring life at the age of 11 by accompanying his father, a whaling captain, to the Greenland seas; and next succeeding his father, he made several voyages to the Spitzbergen and Greenland whaling grounds. He attended classes at Edinburgh University, carried on investigations in natural history, botany, meteorology, magnetism, etc. In 1822 he surveyed 400 miles of the E. coast of Greenland. After one more voyage he retired from seafaring life in order to enter the Church; and having studied at Cambridge and been ordained (1825) at Bessingby, labored faithfully at Liverpool, Exeter, and Bradford. At length failing health compelled him to retire (1849) to Torquay; but he still continued his physical researches. For the better prosecution of these researches Scoresby made a voyage to the United States in 1847, and to Australia in 1856. He died in Torquay, March 21, 1857.

EUROPEAN SCORPION.

Scorpio, in astrology, the "accursed constellation," the "false sign," ominous of war, discord, and woe.

Scorpio, in astronomy, the eighth zodiacal constellation. It is a small but very brilliant constellation. Also the eighth sign of the zodiac, which the sun enters about Oct. 23.

Scorpion, in antiquity, a military engine formerly used, chiefly in the defense of a castle or town.

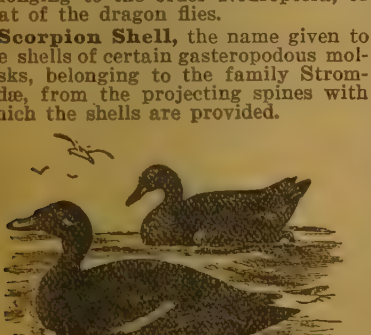
In Scripture, a painful scourge; a kind of whip armed with points like a scorpion's tail.

In zoölogy, any individual of the family Scorpionides. The European species are three or four inches long, and confined to the S. parts of the Continent, but scorpions have a wide geographical range in tropical and subtropical regions, and in Equatorial Africa and South America they grow to a length of 9 or 10 inches. They are nocturnal in habit, concealing themselves under stones, the loose bark of trees, and in crevices in walls, coming forth at dusk. They prey on other spiders and insects.

Scorpion Fish, or **Sea Scorpion,** a genus of teleostean (acanthopterous) fishes, belonging to the gurnard family. The red scorpion fish is the common form. The spotted scorpion fish is a second species, and, like the preceding form, occurs in British waters as well as in the Mediterranean, Atlantic, and the tropical seas.

Scorpion Fly, a genus of insects belonging to the order Neuroptera, or that of the dragon flies.

Scorpion Shell, the name given to the shells of certain gasteropodous mollusks, belonging to the family Strombidæ, from the projecting spines with which the shells are provided.



VELVET SCOTERS.

Scot, Reginald, or **Reynold,** one of the first and boldest writers against the belief in witchcraft, alchemy, astrology, and other prevalent superstitions of his time; born in the early part of the 16th century. He studied at Oxford, and spent his life in the study of old and obscure mystical authors, and the pleasures of gardening, till his death. He died in 1599.

Scoter, or **Surf Duck,** a genus of sea ducks. The most familiar species is the common or black scoter. It occurs in the Arctic regions in summer. An American species of scoter is known as surf duck.

Scotland, the N. division of the island of Great Britian. The greatest length, from N. N. E. to S. S. W., between Dunnet Head and the Mull of Galloway, is 287 miles. The breadth varies from 140 miles to less than 30, the latter in the N., between Dornoch Firth and Loch Broom. Few points in the mainland are more than 40 miles from the sea, the country being so much penetrated by inlets.

The most important cities, with their population in 1901, are: Glasgow, 760,423; Edinburgh, 316,479; Dundee, 160,871; and Aberdeen, 153,108.

The islands of Scotland are said to number altogether nearly 800. On the E. coast they are few and small; but on the N. E. coast are the two large groups of the Orkneys and Shetlands; while on the W. coast the islands are large and numerous. The W. coast of the mainland is generally a wild, deeply indented mountain wall, presenting a series of inlets or sea lochs, while toward the middle the coast is cleft by two great inlets with openings to the S. W., the Firth of Lorn and its continuation Loch Linnhe, and the Firth of Clyde and its ramifications running far inland. The E. coast is sometimes low and sandy, but is often formed of steep rocky cliffs of considerable elevation, the chief inlets being the Firth of Forth and Tay, and the Moray Firth, Cromarty Firth, etc.

Both from the configuration of the surface and the geological structure, the country divides into three divisions, the Highlands, Central Lowlands, and Southern Uplands. The first of these divisions lies N. of a line stretching in a S. W. direction from the coast of Kincardineshire to the Firth of Clyde; the third is the country S. of a line drawn from Dunbar S. W. to Girvan; the country between these lines forms the Central Lowlands. The Highland division is remarkable for the number and elevation of its mountain

masses (many of the summits being over 4,000 feet high). The mountains best known by name are the Grampians, which form a system covering a large area, and culminating on the W. coast in Ben Nevis, 4,406 feet high; while 55 miles to the N. E. rises a remarkable cluster of summits reaching in Ben Macdhui the height of 4,296 feet. The Grampians and their connections are separated from the mountains farther to the N. by Glenmore or the Great Glen of Scotland, a remarkable depression stretching quite across the country from sea to sea, and forming by the series of lakes occupying it and the Caledonian canal connecting them, a waterway from the W. coast to the E. The Southern Uplands are also essentially a mountainous region, summits of over 2,000 feet being frequent, though none exceed 3,000 feet above the sea. The central region, though much less elevated than the other two divisions, has none of the monotony usual in flat countries. Though occupying not more than a sixth of the whole surface, the fertility of the soil and its mineral treasures make this part by far the wealthiest and most populous. The slope of the ancient plateau may be determined by the direction of the principal rivers; in the N. part it is chiefly toward the E., in the S. more equally E. and W.

The chief rivers flow to the E., and enter the German Ocean, the largest being the Tweed, Forth, Tay, South Esk, North Esk, Dee, Don, Deveron, Spey, and Findhorn; those entering the sea on the W. are the Clyde, Ayr, Doon, Dee, Nith, Annan, and Esk. The Clyde in its lower course carries a vast traffic, this being rendered possible chiefly by dredging. Many of the rivers are valuable from the numbers of salmon they produce. A striking feature of the country is the great multitude of lakes, varying in size from Loch Lomond (28 square miles) to the pool-like mountain tarns. In the Northern Highlands almost every glen has its lake and every mountain hollow is filled by a stream or spring. The most valuable mineral region is the Central Lowlands, where coal and iron exist in such quantity as to make this one of the most important mineral fields of Great Britain.

The Parliament of Scotland anciently comprised all who held any portion of land, however small, from the crown by tenure of military service, till the reign of James VI., when the small barons or freeholders were excused from attendance in person, "two or more wise men" being deputed from each county in proportion to its size. Its powers were nominally extensive, but the supreme power was virtually in the king, who by his influence often entirely controlled its proceedings. The Parliament in the whole consisted of three estates — the nobility, the dignified clergy, and the lesser barons, or representatives of shires and burghs. When presbyterianism was formally ratified by law after the revolution of 1688, the ecclesiastical estate ceased to have a place in Parliament. Previously to the era of the Revolution the privy council of Scotland assumed inquisitorial powers, and even torture was administered under the sanction of its authority; but it is now entirely merged in the privy council of Great Britain. The number of peers in the Scotch Parliament was formerly 160, and of commons 155, and all sat in one house and voted promiscuously. At the union of the kingdoms the political system of Scotland was almost entirely incorporated with that of England.

The Court of Sessions is the supreme civil court of Scotland. The Court of Justiciary, or criminal court, composed only of judges of the Court of Sessions, is supreme in the highest sense, since its decisions in criminal cases are not subject to any review. The principal subordinate judicatories are sheriff courts, established in each county or stewartry. Sheriff-substitutes, or judges ordinary, one or more holding separate courts in different districts, decide in the first instance, subject to the review of the principal sheriff or sheriff depute, whose decisions, though final within the limits of his jurisdiction, are reviewable by the Court of Sessions. Besides the sheriff court, each county or district of a county has its justice of peace courts, in which judges decide on principles of equity in minor crimes; and in every town of any importance are bailie, dean or guild, and police courts, with limited jurisdictions.

Scotland has had the advantage of a national system of elementary educa-

tion for over two centuries, a school having been established in every parish by a law of 1696. This scheme did effective service for the education of the people, till the great increase of population, especially in towns, rendered it unequal to the task laid on it. By the passing of the Education Act of 1872 board schools have superseded the old parish schools. Other institutions are the normal or training schools and colleges of the different religious bodies, and the four universities of Edinburgh, Glasgow, Aberdeen, and St. Andrews. The first university was that of St. Andrews, dating from 1411; next came that of Glasgow (1450), then King's College and University, Aberdeen (1494), then Edinburgh University (1582), lastly Marischal College and University, Aberdeen (1593). The two Aberdeen universities were united in 1860.

Scotland was first visited by the Roman troops under Agricola, who penetrated to the foot of the Grampian Mountains. It was afterward exposed to the ravages of the Norwegians and Danes, with whom many bloody battles were fought. Various contests were also maintained with the Kings of England. Robert Bruce, however, secured the independence of the country and his title to the throne by the decisive battle of Bannockburn in 1314. He was succeeded by his nephew, Robert Stewart, and he by his eldest son, Robert. He being a weak prince, the reins of government were seized by the Duke of Albany, who stoned to death the eldest son of the king. James, his second son, to escape a similar fate, fled to France; in the year 1424 he returned to Scotland, and having excited the jealousy of the nobility, he was assassinated in a monastery near Perth. James II., his son, an infant prince, succeeded him in 1437. He was killed by the bursting of a cannon at the siege of the castle of Roxburgh. James III. ascended the throne at the age of seven years. His reign was weak and inglorious, and he was murdered in the house of a miller, whither he had fled for protection. James IV., a generous and brave prince, began his reign in 1488. He was slain at the battle of Flodden. James V., an infant of less than two years of age, succeeded to the crown. He died in 1542, and was succeeded by his daughter, the celebrated Queen Mary. She was succeeded by her son James, who, in 1603, ascended the throne of England, vacant by the death of Queen Elizabeth, when the two kingdoms were united into one great monarchy which was legislatively united in 1707.

Scotland, Church of. The original Scotch Church seems to have been that of the Culdees, then in mediæval times the Roman Catholic Church, was to a certain extent the national church in Scotland. The church resisted the claims of supremacy over it put forth at one time by the Archbishop of York, at another time by the Archbishop of Canterbury; and in 1176 in self-defense cast itself into the arms of the Roman pontiff. When the Reformation struggle began, the crown remained adherent to the old faith, while the nobility tended to the new. From the war of independence Scotland had considered it good policy to guard against any aggression on the part of England by a close alliance with France, and when the Reformation began there were actually French troops in Scotland. The Protestant "Lords of the Congregation," who had taken up arms to defend their cause, applied for aid to Queen Elizabeth, who sent troops to aid them in expelling the French. By a treaty signed on July 7, 1560, it was stipulated that both the French and the English troops should withdraw from Scotland. On Aug. 24 of the same year the Scotch Parliament abolished the papal jurisdiction. The reformers adopted what is now called Presbyterian Church government, though certain superintendents were appointed whose offices after a time were swept away. The first General Assembly was held on Dec. 20, 1560.

The semi-republican constitution of the Church, which became more marked after the office of superintendent had been swept away, and the second book of discipline published (the latter event in 1578), created jealousy in the minds of regents and of sovereigns, and four or five generations of Stuart kings put forth long and determined efforts to transform Presbyterian into Episcopal government. The project cost the lives and liberties of far more people than the short, sharp Reforma-

tion struggle had done, and ended in failure. The Revolution settlement of 1690 reëstablished Presbyterianism, and the General Assembly, which had been interrupted for nearly 40 years, began again to sit and has done so annually from that time till now.

In 1712 an Act of Parliament reintroduced patronage which had been swept away. The operation of this enactment was one main cause of three secessions: that of the Secession, preeminently so called, in 1833; the Relief in 1752; and, the greatest of all, that which created the Free Church in 1843.

The Church of Scotland claims about half the people as at least its nominal adherents. In 1784 the Patronage Act of 1712 was repealed, and each congregation now elects its own pastor. Its chief rivals in Scotland are the Free Church and the United Presbyterians, the latter resulting from a union of the old Secession and Relief Churches.

Scots Guards, the name of a well-known regiment of guards in the British army.

Scott, Austin, an American educator; born in Maumee, O., Aug. 10, 1848; was graduated at Yale University in 1869; taught German in the University of Michigan in 1873–1875; was appointed Professor of History in Rutgers College in 1883; and president of that institution in 1890. He was associated with George Bancroft in the preparation of his "History of the Constitution of the United States."

Scott, David, a Scotch painter; born in Edinburgh, Oct. 10, 1806. He early determined to become a painter, and in 1828 he exhibited his first picture, "The Hopes of Early Genius Dispelled by Death." In 1832 he visited London, Paris, and Geneva, most of the art cities of Italy, and finally reached Rome, where he studied during two years. Having returned to Edinburgh he continued the practice of his art. Died in Edinburgh, March 5, 1849.

Scott, Duncan Campbell, a Canadian poet; born in Ottawa, Ont., Aug. 2, 1862.

Scott, Fred Newton, an American educator; born in Terre Haute, Ind., Aug. 20, 1860; was graduated at the University of Michigan in 1884; was assistant librarian in that institution in 1884–1885 and in 1887–1889; became instructor of English in the same in 1889, and assistant Professor of Rhetoric in 1890; and was made junior Professor of Rhetoric in 1896.

Scott, Frederick George, a Canadian poet; born in Montreal, Canada, April 7, 1861.

Scott, Sir George Gilbert, an English architect; born in Gawcott, near Buckingham, July 13, 1811. His tastes drew him mainly to the study of Gothic architecture, and to him is due in a great measure its revival in Great Britain. He was very largely employed in the erection of new churches, colleges, and secular public buildings. He died in London, March 27, 1878.

Scott, Hugh Lenox, an American military officer; born in Danville, Ky., Sept. 22, 1853; was graduated at the United States Military Academy in 1876, and detailed to duty in the West, where he served in numerous Indian campaigns till 1897. At the beginning of the Spanish-American War he was placed in command of the 1st Army Corps; was appointed adjutant-general of the Department of Havana in 1899; and of the Department of Cuba 1900.

Scott, Irving Murray, an American shipbuilder; born in Hebron Mills, Md., Dec. 25, 1837; was educated at the Baltimore Mechanics' Institute; entered a machine shop in Baltimore and became an expert draughtsman and engineer; went to San Francisco, Cal. He designed the machinery for the Comstock mines; invented and improved cut-off engines and other machines; and was the builder of the famous battleship "Oregon" besides other ships of the United States navy. In 1898 he went to St. Petersburg to advise the Russian government in regard to the building of warships. He died 1903.

Scott, James Hutchinson, an American naval officer; born in East Liberty, Pa., Feb. 11, 1868; was graduated at the Cadet School of the Revenue Cutter Service in 1890. At the beginning of the Spanish-American War he was made executive officer of the revenue cutter "Hudson," which took a distinguished part at the battle of Cardenas Bay, Cuba, May 11, 1898. After the war he was assigned to the

revenue cutter "Manhattan," and later to the "Washington." He was navigator of the "Gresham" when he rescued the Portuguese bark "Fraernidada," saving 113 lives.

Scott, Robert Kingston, an American military officer; born in Armstrong co., Pa., July 8, 1826; was lieutenant-colonel of the 68th Ohio Volunteers; promoted colonel in 1862; distinguished himself in various campaigns, notably that in Mississippi. Later he was captured near Atlanta, but was exchanged in time to participate in Sherman's operations around that city; was promoted Brigadier-General of volunteers in January, 1865, and brevetted Major-General in December following. In 1865–1868 he was assistant commissioner of the Freedman's Bureau in South Carolina. In 1868 he was elected the first governor of the reconstructed State of South Carolina on the Republican ticket, and in 1870 was reëlected by a majority of more than 33,500. In 1871 the "Ku Klux Klan" perpetrated outrages which caused so much excitement that Governor Scott called on the Federal authorities for aid and United States troops were sent to restore order. Later General Scott settled in Napoleon, O., where he died Aug. 13, 1900.

Scott, Sutton Selwyn, an American lawyer; born in Huntsville, Ala., Nov. 26, 1829; was graduated at the University of Tennessee in 1850; held a seat in the Alabama Legislature in 1857–1858 and in 1859–1860; was commissioner of Indian Affairs for the Confederacy in 1863; was again a member of the Alabama Legislature in 1884 and 1890. He also served as United States commissioner to adjudicate claims in New Mexico and Colorado in 1885–1887.

Scott, Thomas Alexander, an American railroad manager; born in Loudon, Pa., Dec. 28, 1824; became connected with the Pennsylvania railroad in 1850; was made its general superintendent in 1858, and its vice-president in the following year. When the Civil War broke out he was placed on the staff of Gov. Andrew G. Curtin of Pennsylvania, and had charge of the sending of volunteers to the front. In April, 1861, the Secretary of War requested him to build a railroad branch from Philadelphia to Washington, which he did in a surprisingly short time; in May, 1861, he was commissioned a colonel of volunteers and placed in command of all government telegraphs and railroads. On Aug. 1 of the same year he was appointed assistant Secretary of War. He resigned this post in June, 1862, to give his time wholly to railroad management; but reëntered the service of the government in September, 1863, and directed the movement of two army corps to Chattanooga to relieve Gen. William S. Rosecrans. Though he transported these troops by a great number of trains, many of which had to run over improvised tracks connecting various lines, he accomplished the task with remarkable quickness. He was president of the Pennsylvania Railroad Company in 1874–1880. He died in Darby, Pa., May 21, 1881.

Scott, Sir Walter, a British author; born in Edinburgh, Scotland, Aug. 15, 1771. From the commencement of his literary career in 1796, when he published his translations of Burger's "Lenore" and "Wild Huntsman," to the year of his decease, he was constantly producing some literary work and reaped an abundant harvest. His patrimonial estate was considerable; and in 1800 he obtained the preferment of sheriff of Selkirkshire, with about £300 ($1,500) a year, and in 1806 he was appointed one of the principal clerks of the session in Scotland. In 1811 he built a mansion on the Tweed, to which he gave the name of Abbotsford. In 1825 the firm of Constable & Co., at Edinburgh, engaged Scott to compose a "Life of Bonaparte." It was in progress when these publishers became bankrupts, and Scott found himself involved on their behalf, and began, at the age of 55, the task of redeeming a debt exceeding $500,000. His work, which appeared during the summer of 1827, in nine volumes 8vo., realized the sum of $60,000, being at the rate of $165 a day for the time he had devoted to it. After the payment of $270,000, his creditors presented to him the library and manuscripts, curiosities, and plate, which had once been his own. In 1831 he went to Italy for his health, returning the following year. He died

in Abbotsford, Sept. 21, 1832, and was buried in Dryburgh Abbey.

Scott, William Amasa, an American educator; born in Clarkson, N. Y., April 17, 1862; was graduated at the University of Rochester in 1886; Professor of History and Political Science at the University of South Dakota in 1887–1890; instructor of History at Johns Hopkins University in 1892–1893; associate Professor of Political Economy at the University of Wisconsin in 1893–1897; full professor in 1897–1900; then became director of a School of Commerce and Professor of Economic History and Theory at the university.

Scott, Winfield, an American military officer; born near Petersburg, Va., June 13, 1786; was educated at William and Mary College, and studied law. In 1808 he was appointed captain of light artillery in General Wilkinson's division, stationed at Baton Rouge, La.; but was suspended for having accused his general of complicity with the conspiracy of Aaron Burr. At the commencement of the War of 1812 he was appointed lieutenant-colonel and fought at Queenstown Heights. In 1813 he was promoted adjutant-general; in 1814, Brigadier-General and brevet Major-General. On July 3 he took Fort Erie, on the 5th fought the battle of Chippewa, and 20 days after, that of Lundy's Lane. He took part in the operations against the Seminoles and Creeks (1835–1837), in the Nullification disturbances in South Carolina, and in the Canadian revolt of 1837–1838. In 1841 he was appointed Commander-in-Chief of the United States army, and in 1846 commanded in the Mexican War. In 1847 he won the victories of Vera Cruz, Cerro Gordo, Jalapa, Perote, Puebla, Contreras, Churubusco, Molino del Rey and Chapultepec; and seized Mexico, Sept. 14. The same year he was brevetted Lieutenant-General. In 1859 he was a commissioner to settle the San Juan dispute with Great Britain; and in 1852 was the unsuccessful candidate of the Whig party for the presidency. In 1861 he retired from office, retaining, by special act of Congress, his pay and allowance. He died in West Point, N. Y., May 29, 1866.

Scotus Erigena, Joannes, a renowned mediæval philosopher of the 9th century. He was an Irishman. His life seems to have been passed mostly in France.

Scovel, Sylvester, an American journalist; born in Denny Station, Pa., July 29, 1869; was educated at the University of Michigan; went to Cuba as war correspondent 1895; was imprisoned in Havana in January, 1896, but made his escape; broke through the Spanish police and military lines 30 times; was captured by the Spaniards in February, 1897, and imprisoned in Sancti Spiritus, Cuba, but was released on the request of the United States government. He next represented the New York "World" in Greece during the war between that country and Turkey; was sent by the same paper to Spain; later to the Klondike, Alaska; and afterward to Havana. He served as correspondent throughout the Spanish war, and was later in the service of the U. S. Military government in Cuba. He resides in Havana.

Scovel, Sylvester Fithian, an American educator; born in Harrison, O., Dec. 29, 1835; received a collegiate education; became a Presbyterian clergyman in 1857 and held various pastorates; was made president and Professor of Morals and Sociology in the University of Wooster in 1883; and resigned the presidency in 1898.

Scranton, a city and county-seat of Lackawanna co., Pa.; on the Lackawanna river; 18 miles N. E. of Wilkesbarre. The city is the fourth largest in the State in population, and is the heart of the extensive anthracite coal section, recently the scene of a great strike.

Scranton has a large general trade, and is one of the chief points for the shipment of anthracite coal. The manufacture of iron and steel forms the principal industry.

The city has an area of 19 square miles; 149 miles of streets, of which 18 miles are paved; and a sewer system covering 52 miles. The streets are lighted by electricity. There is a public school enrollment of nearly 16,000 pupils, and annual expenditures for public education of over $383,000. The annual average death rate is 16.88 per 1,000. Among the public buildings are a court house, United States government building, College of

St. Thomas (R. C.), St. Cecilian Academy (R. C.), Pennsylvania Oral School for the Deaf, Lackawanna Institute of History and Science, Albright Public Library, Welch Philosophical Society, and Taylor Hospital.

The city was established in 1840 by George W. and Joseph H. Scranton. It received its city charter in 1866. Pop. (1900) 102,026.

Screamer, in ornithology, a popular name for any individual of the South American family Palamediidæ. They are gentle and shy, and the crested screamer is said to be domesticated, and to defend the poultry of its master from birds of prey.

Screw, in mechanics, a cylinder surrounded by a spiral ridge or groove, every part of which forms an equal angle with the axis of the cylinder, so that if developed on a plane surface it would be an inclined plane. The screw is considered as one of the six mechanical powers, but is really only a modification of the inclined plane.

Screw Nails, nails called in the trade "wood screws," and made from mild steel and iron; or from brass, copper, and zinc, when the others would be destroyed by rust.

Screw Pine, in botany, the genus Pandanus. The name is given because the prickly leaves are arranged spirally in a triple series, forming dense tufts or crowns like those of the pineapple.

Screw Propeller, a spiral blade on a cylindrical axis, called the shaft or spindle, parallel with the keel of vessels, made to revolve by steam power beneath the surface of the water, usually at the stern, as a means of propulsion.

Screws, William Wallace, an American journalist; born in Barbour, co., Ala., Feb. 25, 1839; studied law and was admitted to the bar in 1859; followed his profession till 1861, when he entered the Confederate army; participated in the capture of Fort Barancas and the navy yard at Pensacola; was promoted lieutenant of the 59th Alabama Regiment; was with Bragg's army in Kentucky and experienced much hardship at Chickamauga and Knoxville. During the last year of the war he fought with General Lee in Virginia; became a correspondent of the Montgomery "Advertiser" during his military service, after which he was placed on the editorial staff. Later he became president of the "Advertiser" Company, and also editor-in-chief. He was secretary of state of Alabama in 1868–1872 and postmaster of Montgomery, Ala., in 1893–1897.

Scribe (Hebrew, sofer), among the Jews, originally a kind of military officer, whose business appears to have been the recruiting and organizing of troops, the levying of war-taxes, and the like. Later the Hebrew name sofer seems to have been especially bestowed on a copyist of the law books. After the exile, under Ezra, apparently the copyist became more and more an expounder of the law. In Christ's time the name had come to designate a learned man, a doctor of the law. As a rule they were Pharisees, and zealous to keep the law pure from any foreign influence, even Chasdim. Among famous scribes are to be reckoned Hillel, Shammai, and Gamaliel.

Scribner, William Marshall, an American penman; born in Waterboro, Me., in 1824. He lived for many years in Boston, Mass.; took an active part in educational work in the West; and became widely known as the author of the system of penmanship copybooks bearing his name. He died in Chicago, Ill., Jan. 15, 1902.

Scripture, Edward Wheeler, an American psychologist; born in Mason, N. H., May 21, 1864; was graduated at the College of the city of New York in 1884; pursued special studies abroad; returned to the United States and was made director of the psychological laboratory of Yale University. His investigations resulted in several important discoveries, including a method of producing anæsthesia by electricity, a method of measuring hallucinations and imaginations, and the law of "mediate associations of ideas." He also invented a color-sight tester by which color-weak or color-blind persons employed in lamp batteries, marine or railroad service can be detected.

Scrivener's Palsy, in pathology, a spasm or cramp affecting certain muscles essential to the act of writing. It commences by a stiffness of the muscles of the arm or forearm, or of the

fingers of the right arm in the evening, disappearing after a night's rest. At the more advanced stage a spasm comes on whenever the pen is taken into the hand. It is called also writer's paralysis and writer's cramp.

Scrofula, a tedious and multiform disease, hereditary in its nature, and one of the most characteristic marks of which is a tendency to swelling of the glandular parts, which sometimes suppurate, and discharge a curdy mixed matter, and are very difficult to heal.

Scroggs, Sir William, a British judge, whose name is used as a synonym for an unjust, venial, and brutal judge. He became chief-justice of the King's Bench in 1678, and was specially notorious for cruelty and partiality during the trial of the unfortunates accused of complicity in the alleged Popish Plot. In 1680 he was impeached by the Commons, but removed from office by the king on a pension. He died in 1683.

Scrub Bird, in ornithology, the genus Atrichia. The English name has reference to its habitat, the dense scrubs of Western Australia. There is but one species, the noisy scrub bird, about eight inches long.

Scruggs, William L., an American diplomatist; born near Knoxville, Tenn., Sept. 14, 1834; was educated at Strawberry Plains College, East Tennessee, and admitted to the bar in 1860. He was engaged in newspaper work in 1862–1871; was United States minister to Colombia in 1871–1877 and 1881–1887; United States electrical engineer to Venezuela in 1889–1893; and legal adviser and special agent of the Venezuelan government during the determination of the Anglo-Venezuelan boundary in 1893–1898, in which capacity he aided in bringing the dispute to a pacific settlement by arbitration.

Scudder, Horace Elisha, an American author; born in Boston, Mass., Oct. 16, 1838. From 1890–1898 he was editor of the "Atlantic Monthly." Died 1902.

Scudder, Samuel Hubbard, an American naturalist; born in Boston, Mass., April 13, 1837; was graduated at Williams College in 1857 and at the Lawrence Scientific School in 1862; was assistant to Prof. Louis Agassiz at the Cambridge Museum of Comparative Zoölogy in 1862–1864; secretary of the Boston Society of Natural History in 1862–1870; and its president in 1880–1887. He was palæontologist of the United States Geological Survey in 1886–1892.

Scudo (plural, **Scudi**), the former monetary unit in the Roman States; divided into 10 paoli or 100 bajacchi, equal to about $1.02. It is now superseded by the Italian scudo of 10 lire ($1.93), which assimilates it to the French system; also an Austrian silver coin worth about $1.02, a Neapolitan silver coin worth about 96 cents, and a Genoese gold coin worth about 96 cents.

Sculpture, the art of cutting or carving any material so as to represent form. Sculpture may be broadly divided into relievo and round. In the former, single figures or groups are represented as more or less raised, but without being entirely detached from a background. According to the latter method, insulated figures, such as statues, or collections, or groups, are made, so as to be entirely independent of a background.

Sculptured Stones, a general name given in Great Britain to a class of monuments of the early Christian period, many of them being mere unhewn stones, with sculpturings of rude inscriptions, or symbols, or ornamental designs, corresponding in style and patterns to the illuminated decorations of Celtic manuscripts of the Gospels.

Scuncheon, in architecture, the stones or arches thrown across the angles of a square tower to support the alternate sides of the octagonal spire; also the cross-pieces of timber across the angles to give strength and firmness to a frame.

Scuppers, channels cut through the sides of a ship at the edges of the deck to carry water off the deck into the sea.

Scurvy, or **Scorbutus,** a disease characterized by a depraved condition of the blood. In consequence of this morbid state of the blood there is great debility of the system at large, with a tendency to congestion, hemorrhage, etc., in various parts of the body, and especially in the gums.

Scurvy Grass, Cochlearia officinalis, a cruciferous plant, growing in Great Britain and elsewhere on the seashore and on the mountains.

Scylla, in classical mythology, a daughter of Nisus, King of Megara. When Minos came from Crete to take vengeance for the death of his son, Androgeos, his efforts to take the city were fruitless as long as the purple lock on the head of Nisus remained unshorn. Urged by her love for Minos, Scylla cut off the fatal lock, and with it destroyed the life of her father and the safety of the city. According to one version Minos tied Scylla to the stern of his ship and drowned her; but another tale says that she was changed into a fish, which Nisus transformed into an eagle, constantly pursued. The myth was localized in the names of the port of Nisæa and the promontory Scyllæum. The "Odyssey" speaks of another Scylla, a daughter of Cratæis, as a monster with 12 feet, six necks, and six mouths, each containing three rows of teeth. This being haunted a rock on the Italian coast; a neighboring rock being tenanted by Charybdis, who thrice every day swallowed the waters of the sea, and thrice threw them up again. Like Medusa, Scylla is represented in some legends as having been beautiful, and as having been changed into a monster through the jealousy of Circe or Amphitrite.

Scylla, and **Charybdis,** the former a famous promontory and town of Southern Italy at the entrance of the narrow strait separating Italy from Sicily. The promontory is 200 feet high, projecting into the sea, and at its base is the town. Charybdis is a celebrated whirlpool in the Straits of Messina, nearly opposite the entrance to the harbor of Messina in Sicily, and in ancient writings always mentioned in conjunction with Scylla. The navigation of this whirlpool is considered to be very dangerous, and must have been exceedingly so to the ancients.

Scymnidæ, a family of sharks, distinguished by the absence of an anal fin, and by dorsals unfurnished with spines. The head is furnished with a pair of small spiracles. The Greenland shark is the best-known species.

Scythe, an implement which has been known from the earliest ages. The ancient form being nearly the same as the modern. It consists of a curved steel blade fixed at right angles to a long, crooked handle, to which are fastened two other smaller handles. One of the first American inventions was an improvement in the scythe, originated by Joseph Jenks, who strengthened the back edge of the blade by welding to it a strip of iron.

Sea, a general name for the great body of salt water which covers the greater part of the earth's surface; the ocean. In a more limited sense the term is applied to a part of the ocean which from its position or configuration is looked upon as distinct and deserving of a special name, as the Mediterranean Sea, the Black Sea, etc. The term is also occasionally applied to inland lakes, as the Caspian Sea, the Sea of Galilee, etc.

The waters of the sea cover about 143,259,300 square miles, or about five-sevenths of the surface of the earth. The solid globe or lithosphere, viewed as to its superficial aspect, may be regarded as divided into two great planes; one of these corresponds to the dry land or upper surface of the continental masses, and occupies about two-sevenths of the earth's surface; the other, corresponding to the abysmal regions of the ocean, is depressed over 2½ miles below the general level of the continental plane, and occupies about four-sevenths of the earth's surface. The transitional area, uniting these two planes, forms the sides or walls of the ocean basins, and occupies about one-seventh of the earth's surface. Were the solid crust of the earth to be reduced to one uniform level by removing the elevated continental masses into the depressed abysmal areas, the surface of the earth would then be covered by a universal ocean or hydrosphere with a depth of about 2 miles. The bulk of water in the whole ocean is estimated at 323,800,000 cubic miles.

The temperature of the surface waters of the ocean varies from 28° F. in the polar regions to 85° or 86° in equatorial regions. The temperature of the water at the bottom of the ocean over the abysmal areas ranges from 32.7° F. to 36.8° F. In the open ocean

the temperature usually decreases as the depth increases, the coldest water being found at the bottom. In enclosed or partially enclosed seas, cut off by barriers from the great ocean basins, the temperature remains uniform from the height of the barrier down to the bottom. In regions where there are heavy rains, or where rivers pour fresh water into the sea, alternating layers of colder and warmer water have been observed within a hundred fathoms from the surface.

The circulation of oceanic waters is maintained by the motion of the prevailing winds on the surface layers. In the oceanic areas the prevailing winds are governed by the large anticyclonic areas situated toward the centers of the North and South Atlantic and North and South Pacific. The winds blow out from and around these anticyclonic areas. In the Southern Hemisphere the warm salt water of the tropical regions is driven to the S. along the E. coasts of South America, Africa, and Australia, till on reaching a latitude of between 50° and 55° S. it sinks on being cooled and spreads slowly over the floor of the ocean to the N. and S. A similar circulation takes place in the Northern Hemisphere, though much modified by the peculiar configuration of the land masses; the cold salt water at 30° F. which occupies the deeper parts of the Arctic basin is largely made up of the dense Gulf Stream water, which sinks to the bottom on being cooled in the Norwegian Sea. The water evaporated from the sea surface is borne to the land masses and condensed on the mountain slopes. It is estimated that over 6,500 cubic miles of this water is returned to the sea by rivers annually, bearing along with it a burden of soluble salts and earthy matters in suspension; in this way the ocean has in all probability become salt in the course of ages. The saltest waters are found in the regions of greatest evaporation; for instance, in the Red Sea, Mediterranean, and in the trade-wind regions of the great ocean basins.

Sea Anemone, the popular name given to a number of animals of the sub-kingdom Cœlenterata and class Actinozoa. They are among the most interesting organisms met with on the sea beach, and in aquaria form a great attraction. All sea anemones, however varied in coloration or form, present the essential structure and appearance of a fleshy cylinder, attached by its base to a rock or stone, and presenting at its free extremity the mouth, surrounded by a circlet of arms or tentacles. With these tentacles, in some cases exceeding 200 in number, they seize and secure their food which they paralyze by means of the thread cells, common to them with all Cœlenterata. The sea anemones resemble the Hydræ in their marvelous powers of resisting injuries and mutilation. Thus if a sea anemone be divided longitudinally, a new animal will in due time be formed out of each half. They appear singularly insusceptible also to the action of hot or cold water, and seem to be wonderfully long-lived.

Sea Bear, a name sometimes given to the polar bear; also to a kind of seal, on account of its appearance.

Sea Buckthorn, or **Sallow Thorn,** large shrubs or trees with gray silky foliage and entire leaves. There is but one known species, sometimes called the sea buckthorn, a large thorny shrub or low tree, a native of parts of the sandy sea coasts of England and the continent of Europe, is found also throughout a great part of Tartary. It is sometimes planted to form hedges near the sea, growing luxuriantly where few shrubs will succeed. The berries are orange colored and are gratefully acid.

Seabury, Samuel, an American clergyman; born in Groton, Conn., Nov. 30, 1729; was graduated at Yale in 1748; studied medicine at Edinburgh; and received deacon's and priest's orders in England in 1753; in 1757 he was promoted to the "living" of Jamaica, Long Island, and 10 years later to that of Westchester, N. Y. He removed to New York, where he made his medical knowledge contribute to his support, acted as chaplain of the King's American Regiment, and wrote a series of pamphlets which earned for him the special hostility of the patriots. On March 25, 1783, the clergy of Connecticut met at Woodbury and elected Seabury bishop; and for 16 months he waited vainly for consecration. On Nov. 14, 1784, he was consecrated at Aberdeen. Bishop Sea-

bury's jurisdiction embraced Rhode Island as well as Connecticut, and he acted also as rector of St. James's Church, New London. In 1792 he joined with three bishops of the English succession in consecrating a fifth, Bishop Claggett, through whom every American bishop derives from Seabury and the Scotch Church. He died Feb. 26, 1796.

Sea Dragon, in ichythyology, Pegasus draconis, common in the Indian Ocean. The popular name has reference to the resemblance of this fish to the mythical dragon.

Sea Eagle, a name applied to one or two members of the eagle family; but probably with most distinctive value to the white-tailed eagle or erne, found in all parts of Europe. The American bald-headed eagle from its frequenting the seacoasts is also named the sea eagle.

Sea Elephant, a large seal, called also bottle-nosed seal and seal elephant. It is the largest of the seal family, being larger than an elephant. The average length of the male is 12 to 14 feet, but some of 20 and 25 feet are mentioned. The female is generally about 10 feet long. It gets its name from its size and from its proboscis, which stretches out a foot or more, somewhat like the trunk of an elephant. The sea elephant was once found in abundance at Heard's Island in the Southern Indian Ocean, and at the Falkland and South Shetland Islands and other islands in the South Atlantic, and thousands of barrels of oil were brought from there every year, but the elephants were hunted so persistently that few are now left. It was once common on the coast of California, but is now seldom seen.

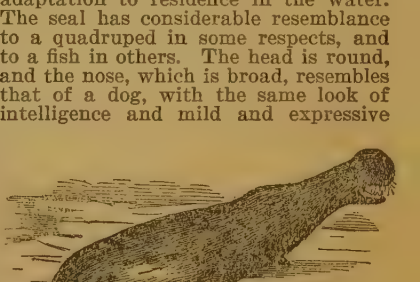
Sea Hare, the peculiar name of a genus of gasteropodous mollusca. These animals are slug-like in appearance, and derive their popular name from the prominent character of the front pair of tentacles, which somewhat resemble the ears of a hare.

Sea Horse, a popular name for the hippopotamus and the walrus. Also a fabulous animal, represented with fore-parts like those of a horse, and with hinder parts like a fish. In mythology Neptune is said to have employed them to draw his chariot.

Sea Kale, a species of colewort, called also sea cabbage. It is a native of the seacoasts of Europe, and is much cultivated in gardens as a table vegetable.

Seal, an impression made on paper, clay, wax, or other substance, by means of a die of metal, stone, or other hard material. The stamp which yields the impression is frequently itself called the seal.

Seal, in zoölogy, the family Phocidæ, or seal tribe, are, of all four-limbed mammiferous animals, those which display the most complete adaptation to residence in the water. The seal has considerable resemblance to a quadruped in some respects, and to a fish in others. The head is round, and the nose, which is broad, resembles that of a dog, with the same look of intelligence and mild and expressive



HOODED SEAL.

physiognomy. It has large whiskers, oblong nostrils, and great black sparkling eyes. It has no external ears, but a valve exists in the orifices, which can be closed at will, so as to keep out the water; the nostrils have a similar valve; and the clothing of the body consists of stiff glossy hairs, very closely set against the skin. The body is elongated and conical, gradually tapering from the shoulders to the tail. The spine is provided with strong muscles, which bend it with considerable force; and this movement is of great assistance to the propulsion of the body. There are many species of these animals; some are found in almost every quarter of the globe, but chiefly in the frigid or temperate regions.

The common seal, abundant in the cool and frigid regions, is three to five feet long, and is much hunted for its skins, and for its oil and flesh. The skins though their covering is hair, not fur, are much valued. The sea lion is found on both coasts of the Pacific from California and Japan N., and there is an Antarctic species. The S. fur seals have been nearly exterminated. The celebrated N. species which yields the valuable sealskins of commerce, is confined to the North Pacific, breeding only on two of the Pribilof Islands, in Bering Sea, and two of the Commander Islands.

Sealed Orders, written instructions, generally to naval officers. The custom of having warships sail "under sealed orders" has arisen from the desire of maritime powers to prevent their plans from becoming known to the enemy. In the American navy such orders come from the President and are delivered to a commander of a ship or squadron by a confidential messenger who knows nothing of their contents. Sailing under sealed orders is now the common naval practice in time of war.

Sea Lemon, Doris, a genus of gasteropodous mollusca. It is destitute of a shell, and moves by means of a broad ventral foot. The gills exist in the form of a circle of plumes in the middle of the back, at the posterior extremity of the body, and can be retracted at will within the body. The name sea lemon has been applied to these mollusks from their usually yellow color and somewhat lemon-like shape.

Sea Letter, a document issued from the custom house, carried by every neutral ship on a foreign voyage in time of war. It specifies the nature and quantity of the cargo, the place whence it comes, and its destination.

Sealing Wax, a composition for sealing or securely fastening letters or packets.

Sea Lion, a popular name for the genus Otaria; specifically, the hair seal of the Pribilofs, or Steller's sea lion. It is destitute of fur, and its skin is of little value, but the hide, fat, flesh, sinews, and intestines are all useful to the Aleutian islanders. Sea lions are found round Kamchatka and the Asiatic coast to the Kurile islands, and there is a colony of them at San Francisco protected by the National government.

Sea Mat, or **Hornwrack,** Flustra, a genus of Molluscoida. The sea mat, which presents the appearance of a piece of pale brown seaweed, is a compound organism, produced by a process of continuous gemmation or budding from a single primitive polypide, which latter was in turn developed from a true egg.

Sea Mouse, Aphrodite, a genus of dorsibranchiate Annelids or marine worms. The most notable feature in connection with the sea mouse consists in the beautiful iridescent hues exhibited by the hairs or bristles which fringe the sides of the body. The sea mouse inhabits deep water, and may be obtained by dredging, though it is frequently cast up on shores after storms.

Sea Mussel, a family of mollusks, comprising scalepha which have the shell equivalved, oval or elongated, and the epidermis thick and dark. They seek concealment, and spin a nest of sand, or burrow in mud banks. There are more than 100 living, and 250 fossil species.

Search Light, an electric arc light the rays of which are collected into a parallel beam that may be projected to a great distance and turned in any direction.

Search, Right of, in international law, the right of belligerents, during war, to visit and search the vessels of neutrals for contraband of war. The government of the United States has energetically refused to submit to the right. This question was one of the chief causes of the War of 1812.

Search Warrant, in law, a warrant granted by a justice of the peace to enter the premises of a person suspected of secreting stolen goods, in order to discover and seize the goods if found.

Sears, Lorenzo, an American rhetorician; born in Searsville, Mass., April 18, 1830; was graduated at Yale University in 1861, and at the General Theological Seminary of New York in 1864; held various charges in New England in 1864–1885; was Professor of Rhetoric and English Lit-

erature at the University of Vermont in 1885–1888; and became Professor of Rhetoric and American Literature at Brown University in 1890.

Sea Serpent, the name given to gigantic animals, presumedly of serpentine form, which have been frequently described by sailors and others, and which are believed by many naturalists to exist in the sea depths, especially in tropical oceans.

Sea Sickness, a nausea, or tendency to vomit, which varies, in respect of duration, in different persons upon their first going to sea. With some it continues only for a day or two; while with others it remains throughout the voyage.

Seaside Grape, a small tree which grows on the sea coasts of Florida and the West Indies. It has clusters of edible fruit somewhat resembling the currant in appearance, a beautiful hard wood which produces a red dye, and yields the extract known as Jamaica kino.

Sea Snake, any individual of the family Hydrophidæ. They have depressed heads, dilated behind and covered with shields. Their bodies are covered with square plates; their tails are very much compressed and raised vertically, so as to aid them in swimming. They are very venomous; but rarely, if ever, exceed four feet in length. They are found off the coast of India in the seas around the Indian islands, and in the Pacific, but at no great distance from land.

Season, the alterations in the relative length of day and night, heat and cold, etc., which take place each year. In the United States there are four seasons, spring, summer, autumn, and winter. The Anglo-Saxons reckoned only three, spring, summer, and winter, the words for which are all from Anglo-Saxon; autumn was borrowed from the Romans.

Sea Spider, or **Spider Crab,** a marine crab. Its body is somewhat triangular in shape, and its legs are slender and generally long. It lives in deep water, and is seldom seen on the shore.

Sea Surgeon, or **Surgeon Fish,** so named from the presence of a sharp spine on the side and near the extremity of the tail, bearing a resemblance to a surgeon's lancet. It occurs on the Atlantic coasts of South America and Africa, and in the Caribbean seas.

Seaton, William Winston, an American journalist; born in King William co., Va., Jan. 11, 1875; was educated in a private academy. He early engaged in journalism; settled in Washington, D. C., in 1812, and became associated with his brother-in-law, Joseph Gales, Jr., in editing and publishing the "National Intelligencer." In 1812–1820 they were the only reporters of Congress, one working in the Senate and the other in the House of Representatives. He died in Washington, D. C., June 16, 1866.

Seattle, a city and county-seat of King co., Wash.; on the E. shore of Puget Sound, 28 miles N. of Tacoma. The city is built on undulating ground with valleys running N. and S. A remarkable view is presented by the steep rise of the hills from the Sound. Within sight of the city are the snow-capped ranges, the Olympics, on the W., and the Cascades on the S. E., and Mount Rainier on the S., with an altitude of 14,444 feet.

The city is the base of supplies for a large tract of inland country in which are mines, lumber camps, and extensive agricultural interests. It is the commercial center of Puget Sound. In 1897 it became the chief N. starting point in the United States for the Alaska gold fields.

The city has an area of 28 square miles; 105 miles of streets, of which 2 miles are paved; a system of waterworks, costing $1,300,000, with 127 miles of mains; and a sewer system covering 65 miles. The streets are lighted by gas and electricity. There is a public school enrollment of nearly 11,000 pupils, and annual expenditures for public education of over $290,000. The annual cost of maintaining the city government is about $834,000. The annual death rate averages 8.44 per 1,000. Seattle contains the State University, a Baptist University, College of the Immaculate Conception, Seattle Female College, the Academy of Holy Names, a United States weather bureau station, United States custom house, and a United States land office.

It was in 1852 that the first per-

manent settlers came to the vicinity of Seattle. It took Seattle three years to gain its first 150 inhabitants. Then followed an Indian war, and even that small population was reduced, slowly to grow again. In 1902 Seattle and its environs have not less than 110,000 population.

Sea Urchin, one of the Echinoids. They have the body covered with a calcareous crust or shell, of an extremely porous structure, in polygonal plates nicely adapted to each other, and increasing by additions to the edges of each plate, so that the shell may enlarge with the enlargement of the animal, while new plates are also added around the superior orifice.

Seaweed, a plant growing wholly in water, fresh or salt. Some are so small and delicate that they can be seen only with a microscope, and others are of such immense growths that they almost fill up the seas in which they live.

Seawell, Molly Elliot, an American author; born in Gloucester co., Va., Oct. 23, 1860.

Seay, Abraham J., an American jurist; born in Amherst co., Va., Nov. 28, 1832; was taken by his parents to Osage co., Mo., in 1835, and reared on a farm. In 1861 he entered the Union army and served throughout the war, participating in the march to the sea; became a colonel of volunteers. He served as circuit judge in 1875–1887, and as supreme judge of Oklahoma in 1890–1892; was governor of that Territory in 1892–1893; then engaged in banking, stock-growing and farming.

Sebastes, a genus of fish with about 20 species, widely distributed in temperate seas. They range from one to four pounds in weight, in general appearance resemble the sea perches, and are esteemed as food.

Sebastian, Dom, King of Portugal; born in Lisbon in 1554; ascended the throne at three years of age, on the death of his grandfather, John III. He determined to carry on war against the Moors in Africa, hoping to effect something for Christianity and the fame of Portugal. He equipped a fleet and an army, which comprised the flower of the Portuguese nobility and sailed for Africa in 1578, at the age of 23 years. A general engagement soon took place at Alcacer-el-Xebir and the ardor of the king bore him into the midst of the enemy. Sebastian fought with bravery, while most of his attendants were slain by his side. He disappeared; and so complete was the slaughter that not more than 50 Portuguese survived this ill fated expedition. His death is supposed to have occurred Aug. 4, 1578.

Sebastiani, Francois Horace Bastien, Count, a Marshal of France; born in Porta d'Ampugnano, Corsica, Nov. 10, 1772. He fought at Marengo, executed some important diplomatic service in Turkey in 1802–1803, after which he became general of brigade and was wounded at Austerlitz. In 1806 he was deputed to Turkey. But the deposition of the Sultan and the treaty of Tilsit put an end to the French intrigues in Turkey, and Sebastiani was recalled (June, 1807). He commanded the 4th French army corps in Spain, and distinguished himself in the Russian campaign of 1812 and at Leipsic. On the exile of Napoleon to Elba he gave in his adherence to the Bourbon government, but joined his old master on his return. After the revolution of 1830 he held for brief periods the portfolios of naval and foreign affairs, and the embassies to Naples and London. He died in Paris, July 20, 1851.

Sebastopol, or **Sevastopol,** a fortified town and seaport of European Russia, on the W. coast of the Crimea. It stands on a creek on the S. side of one of the finest bays in the world, the Etenus of Strabo, which is defended by strong forts on both sides. In 1853 Russia demanded from the Turkish government guarantees for the rights of the Greek Christians of Turkey, which the Porte refused to concede. This led to the beginning of the Crimean War, in which France, England and Sardinia took sides with Turkey. The armies of the allies effected a landing at the Bay of Eupatoria, Sept. 14, 1854. On their S. march toward Sebastopol they encountered the Russian forces, commanded by Prince Menzikoff, on the banks of the Alma. A bloody battle was fought (Sept. 20), in which the Russians were compelled to retreat. On Sept. 25 the British forces seized

Balaklava, and on Oct. 9 the regular siege of Sebastopol commenced. On Oct. 25 and Nov. 5, the Russians vainly attempted to annihilate the besieging forces in the battles of Balaklava and Inkermann, but afterward confined themselves mainly to the defensive. The final bombardment was opened Sept. 5, and lasted for three days. On Sept. 8 the Malakoff and Redan were stormed and taken by the allies. The Russians, after having blown up their extensive fortifications on the S. shore of the harbor, retreated to the N. side, which the allies never seriously attempted to conquer. The latter remained inactive in their camps, and no further feats of arms were accomplished. The forces of the allies were withdrawn in the summer and autumn of 1856. By the peace of Paris (1856) Russia lost the right of navigation on the Danube, besides a strip of territory to the N. of that river, and, also, the unrestricted navigation of the Black Sea. In November, 1870, Russia, availing herself of the Franco-Prussian imbroglio, demanded and obtained from the Western Powers a revision of the treaty of Paris, in so far as it affected the restrictions placed on her in the Black Sea. Sebastopol is one of Russia's greatest naval headquarters.

Sebesten, or **Sebestan,** in the plural in botany, the nuts of Cordia myxa and C. latifolia, believed to be the Persea of Dioscorides, and the trees themselves. The nuts are sweet, and when cut have a heavy smell. They are eaten in India.

Secamone, erect or climbing smooth shrubs, with opposite leaves, a cymose inflorescence and small flowers, with a five leaved stamineous crown and 20 pollen masses.

Secchi, Angelo, an Italian astronomer; born in Reggio, Italy, July 29, 1818, and trained as a Jesuit. In 1848 he became Professor of Physics at Georgetown College, Washington, and in 1850 at the Collegio Romano, Italy, and director of the Roman observatory, where he labored till his death. His chief discoveries were in the region of spectrum analysis and solar physics. He died in Rome, Feb. 26, 1878.

Secession. Whenever a State has claimed the right to withdraw from the Union, it has based its claim on the doctrine of State sovereignty. This claim must be considered as emphatically distinct from the right of revolution, insurrection, or violent revolts, in all of which there is no claim of legal right, and the appeal of which is to force instead of to reason. In its turn, nearly every State in the Union has advanced the right of secession, and usually each has been condemned by the others as treasonable. This claim was specifically brought forward or involved in the Kentucky "Resolutions," the Hartford "Convention," and the "Nullification Ordinance." The election of Abraham Lincoln, when the political situation was flanked with sectional differences resting on State claims, was all that was necessary to change the theory of secession in the South into an attempt to effect the reality. South Carolina took the lead. No single State was prepared or willing to secede alone, but Florida, Mississippi and Alabama agreed to secede with any other State. Again South Carolina was leader, in calling a State convention, and on Dec. 20, 1860, the Act of 1788, ratifying the National Constitution, was repealed, and it was declared "that the union now subsisting between South Carolina and other States, under the name of the United States of America, is hereby dissolved." A declaration of the causes for this act was formulated, and on the 24th was adopted. The governor proclaimed "the secession of South Carolina," the same day. Mississippi was the first to follow this example, Jan. , 1861, then in succession came Florida, Jan. 10; Alabama, Jan. 11; Georgia, Jan. 19; Louisiana, Jan. 26; and Texas, Feb. 1, though in the case of this last State the proceedings were decidedly irregular. Virginia followed in April; Arkansas and North Carolina in May; and Tennessee in June. The Civil War was the consequence. The final issue was the victory of the government, the surrender of the Confederate to the Federal army, and the full union of the United States of America.

Secession Church, in Scotch ecclesiastical history, a religious body which broke off from the Established Church of Scotland in 1733. In 1820 they were reunited as the Associated

Synod, and in 1847, joining with the Relief, constituted the United Presbyterian Church.

Second, the 60th part of a minute of time or of a minute of a degree. The hour and degree are each divided into 60 minutes, and each minute is subdivided into 60 seconds.

Second Adventists, a religious organization having six slightly differing branches in the United States. They are Protestants and their belief is characterized by faith that at some time in the future there will be a visible reappearance of Christ. They do not agree among themselves whether this "divine return" will be visible to all the Church, or to the whole world, or to certain elect "first fruits" of the Church. The original Adventists were called Millerites, and were followers of William Miller from 1781 till 1849. Miller promulgated a belief that the world would end and the millennium would begin in October, 1843. Many people had such implicit faith in his prophecy that they did not "plant or reap" crops, neglected their business, and spent months of time before the appointed hour in religious exercises so as to be in readiness to ascend to heaven. When Miller's prediction proved a failure, some of his followers lost faith in the doctrine, while others decided that an error in calculation had been made. Other predictions have been made since that time, and other dates have been set for the "end of the world." Disappointment, however, has not materially lessened the number of Adventists, since from 50,000 in 1843 they increased to 60,000 in 1890, and in 1900 attained a following of over 125,000.

Secondary Rocks, in geology, an extensive series of stratified rocks, having certain characters in common distinguishing them from the primary rocks beneath, and the Tertiary above them.

Secondary Schools, educational institutions in the United States higher in grade than the common schools, and next below the grade of colleges. Under this head are classed all public high schools, academies, etc.

Second Rome, Aquiljar, a town of Austria. In the time of the Romans it was entrepot and commercial center of Northern and Western Europe and the Emperor Augustus often resided there. It was taken and burned by Attila, at which time its population was reckoned at 100,000.

Second Sight, a gift of prophetic vision, long supposed in the Scotch Highlands and elsewhere to belong to particular persons. The most common form it took was to see the wraith, fetch, or shadowy second self of some person soon to die, often wrapped in a shroud, or attended with some other of the special circumstances of death or burial.

Secretary Bird, the Serpentarius secretarius, from South Africa, a bird protected by the native and English

SECRETARY BIRD.

authorities for the service it renders in destroying venomous serpents, which it kills by blows from its powerful feet and bill, though occasionally the serpent succeeds in inflicting mortal injury on its foe.

Secretion, in physiology, the process by which materials are separated from the blood, and from the organs in which they are formed, for the purpose either of serving some ulterior office in the animal economy, or being discharged from the body as excrement. Secretion is one of the nat-

ural functions of the living body, and is as necessary to health as nutrition. Where the secreted materials have some ulterior purpose to serve, they are known as secretions; where they are discharged from the body, excretions.

Secret Service, United States, a bureau connected with the Treasury Department, whose chief and almost sole object is to guard against the counterfeiting of the money of the United States and the detection and punishment of the counterfeiters. It is presided over by a chief, who has under him a number of skillful detectives, who are stationed in various parts of the country or assigned to special fields of operation on occasions of emergency.

Secret Societies, organizations that in some form or other have existed in all ages of the world's history. The Freemasons and the Odd Fellows are perhaps the best known of the secret societies in the United States. Speculative Freemasonry does not go further back than the 18th century; its objects are philanthropic and moral. There are associations similar in character to it in Tahiti and others of the Pacific Islands, and among the Foulah and the Negroes of Sierra Leone and the adjacent parts of Africa. There have been numerous associations of a secret kind formed for criminal purposes, and for mutual assistance against and in defiance of the laws of the land; the Assassins in Persia and Syria, the Thugs in India, the Camorra, the Mafia, and the Decisi (1815) in Italy, and the Garduna may be instanced.

There are perhaps no people in the world who favor secret societies more than the Chinese and the inhabitants of the United States. But while the objects of these associations in the former country are mostly political, in the latter they are predominantly social. The most powerful organization of this nature in China — indeed its ramifications extend to all parts of the world where Chinamen are allowed to settle — is the Tien-ti Hwuy (Union of Heaven and Earth), and presents many features analogous to Freemasonry, such as secret signs, solemn initiation ceremonies, peculiar observances, and so forth. Secret societies of all kinds, and for nearly all conceivable purposes, are found in the United States, from the Vigilance Committee, formed in the Western States for the preservation of public order, to the associations in the colleges and universities.

Section, a distinct part or portion of a book or writing; a division or sub-division of a chapter; a paragraph; a division of a statute or other writing. Hence often applied to the sign §, used to denote such a division or sub-division. Also a distinct part or portion of a country, people, community, class, or the like; a class, a division. In that portion of the United States once general government land and surveyed by order of the National authorities, one of the portions of a square of 640 acres, or one square mile each, into which the public lands are divided. Each section is 1-36 of a township. The sections in each township are numbered. Sections are sub-divided into half-sections, quarter-sections, and even into eighths of a section. In preëmpting a homestead a settler may claim a quarter section.

Secular, occurring or observed once in an age, century, or cycle; as a secular year. Also pertaining or relating to an age, generation, or period of time; as secular inequality. Or pertaining or having reference to this present world, or to things not spiritual or holy.

Secularism, the name given, about 1846, by George J. Holyoake to an ethical system founded on natural morality.

Sedan Chair, a portable covered vehicle for carrying a single person, borne on two poles by two men. The name is derived from the town of Sedan, where this species of conveyance is said to have been invented. Sedan chairs were largely used during the greater part of the 18th century, being found very well adapted for transporting persons in full dress to public and private entertainments. Sedan chairs have also been employed as ambulances for conveying sick persons to hospitals.

Sedative, in medicine, a remedy which allays irritability and irritation, and which assuages pain. They are used both externally and internally.

Sedge, an extensive genus of grass-like plants containing thousands of species, mostly inhabiting the N. and temperate parts of the globe. The greater portion of the species are marsh plants. The sedges in general are of but little utility to man. They furnish coarse fodder, which is rejected by most of the domestic quadrupeds. The decomposed roots and leaves contribute largely to turn the soil of marshes into peat.

Sedgwick, John, an American military officer; born in Cornwall, Conn., Sept. 13, 1813. He was graduated at the United States Military Academy in 1837; served in the Mexican and Seminole War as 1st lieutenant (1846–1847); was a lieutenant-colonel in the regular army when the Civil War began; served in the Army of the Potomac as commander of brigade and division till February, 1863, when he was placed in command of the 6th Army Corps. He distinguished himself at Fair Oaks, May 31, and June 1, 1862; took part in the Seven Days' battles, June 25 to July 1; and having displayed great bravery and skill at Antietam, Sept. 16 and 17, was promoted to Major-General in December. He was severely wounded at Antietam; took a leading part in the battles of Chancellorsville, Gettysburg, and the Wilderness; and was killed at the battle of Spottsylvania, May 9, 1864.

Sedgwick, William Thompson, an American biologist; born in West Hartford, Conn., Dec. 29, 1855; was graduated at the Sheffield Scientific School of Yale University in 1877; instructor of biology at Johns Hopkins University in 1880–1883; Professor of Biology at the Massachusetts Institute of Technology since 1883. He was joint author of "General Biology."

Sedition, a factious rising or commotion in a State, not amounting to insurrection; the stirring up or fomenting of such a commotion; the stirring up or fomenting of discontent against government, and disturbance of public tranquillity, as, by inflammatory speeches or writings; acts or language inciting to a breach of the public peace; excitement of resistance to lawful authority. Sedition comprises such offenses of this class as do not amount to treason, being without the overt acts which are essential to the latter.

Sedley, Henry, an American author; born in Boston, Mass., April 4, 1835. Originally a civil engineer, he surveyed and mapped many of the streets of San Francisco, Cal., after doing which he went round the world. He afterward became a journalist, and was at one time one of the editors of the New York "Evening Post," "Times," and "Commercial Advertiser"; was founder and for a time editor of the "Round Table," which was later changed to the "Nation." He died in New York city, Jan. 18, 1899.

See, a diocese; the seat of episcopal authority; the jurisdiction; as, an episcopal see; the province or jurisdiction of an archbishop; as, an archiepiscopal see; the seat, place, or office of the Pope or Roman pontiff; as, the Papal See; the authority of the Pope or court of Rome; as, he was delegated by the See of Rome.

See, Thomas Jefferson Jackson, an American astronomer; born near Montgomery City, Mo., Feb. 19, 1866; was graduated at the University of Missouri in 1889, and at the University of Berlin in 1892; was in charge of the observatory of the University of Missouri in 1887–1889; had charge of and aided in the organization of the Yerkes Observatory of the University of Chicago in 1893–1896; was astronomer of the Lowell Observatory during the survey of the Southern heavens in 1896–1898; became Professor of Mathematics in the United States Naval Academy in 1899; and in December of that ear took charge of the 26-inch equatorial telescope of the United States Naval Observatory. He completed about 45 orbits of double stars; was a Fellow of the Royal Astronomical Society; member of the American Philosophical Society; the American Mathematical Society, the Astronomische Gesellschaft, etc.; and was the author of numerous astronomical papers and books, including "Researches on the Evolution of the Stellar Systems," and "The Evolution of the Double-star System."

Seed, the nature of a fecundated ovule. It consists essentially of the young plant or embryo, inclosed in in-

teguments, of which there are usually two. It varies much in form. It is sometimes curiously marked with furrows, ridges, etc., and often furnished with hairs, spines, wings, and other appendages. The inner portion of the seed, called the nucleus, or kernel, may either consist of the embryo alone, as in the wallflower and the bean, or of the embryo inclosed in albumen or perisperm, as in the morning-glory.

Seeding, sowing either in drills or broadcast, an operation formerly conducted altogether by hand. Machines are now in use adapted to sowing the finest grass seeds or the most bulky grains and seeds.

Seeley, John Robert, Sir, an English historian; born in London, in 1834; in 1869 he became Professor of Modern History in Cambridge University. He first came into notice through "Ecce Homo" (a life of Christ), in 1865, which made a great sensation and was reviewed by Mr. Gladstone; he published "Natural Religion" in 1882; and in "Lectures and Essays" (1870) he wrote on art, ethics, and education. He died in Cambridge, Jan. 13, 1895.

Seelye, Julius Hawley, an American educator; born in Bethel, Conn., Sept. 14, 1824. He was president of Amherst College (1876–1890), and inaugurated the "Amherst system" of self-government, which was productive of good results. He died in Amherst, Mass., May 12, 1895.

Seelye, Laurenus Clark, an American educator; born in Bethel, Conn., Sept. 20, 1837; was graduated at Union College in 1857; studied in the Universities of Berlin and Heidelberg; became Professor of Rhetoric and English Literature in Amherst College in 1864. He was chosen president of Smith College in 1873.

Seguin, Edouard, an American physician; born in Clamecy, France, Jan. 20, 1812; studied medicine and surgery, devoted himself specially to the study of idiocy and the training of idiots and the insane. He settled in the United States after the revolution of 1848. In 1873 he was United States commissioner on education to the Vienna Exposition. He invented a physiological thermometer. He died in New York city, Oct. 28, 1880.

Seidl, Anton, a Hungarian orchestra conductor; born in Budapest, Hungary, May 6, 1850. He obtained the position of conductor at the Leipsic Opera House in 1879, through Wagner's influence. In 1882 he made a tour of Europe as conductor of the Nibelungen Opera Troupe. In 1883 he was apointed conductor at the Bremen Opera House, where he remained till 1885; when he became conductor of German opera in New York city, succeeding Dr. Leopold Damrosch. He afterward directed the concerts of the Philharmonic Society in that city, succeeding Theodore Thomas. He died in New York city, March 28, 1898.

Seigniorage, an ancient royalty or prerogative of the crown whereby it claimed a percentage upon the bullion brought to the mint to be coined or to be exchanged for coin. As used in the United States, the term seigniorage means the profit arising from the coinage of bullion. The government does not purchase gold bullion, but coins it on private account. There is no profit from its coinage, the face value of gold coins being the same as their bullion value; but at the present ratio of 16 to 1, the face value of the silver dollar is greater than its bullion value; therefore, when silver bullion is purchased and coined into dollars there is a profit arising from such coinage, the amount of which depends on the price paid for the bullion.. The silver purchased by the government is carried on the books of the treasury at its actual cost, and the seigniorage is declared on the coinage of each month and paid into the treasury.

Seismology, the study of earthquakes. Though seismology can scarcely be said to have existed before the early part of the 19th century, it has a rapidly growing bibliography and is accumulating a store of facts and observations on which generalizations may be based; and Professor Milne is sanguine that earthquake warnings in countries subject to seismic disturbances will be as common and as trustworthy as the storm warnings at our seaports.

Seiss, Joseph Augustus, an American clergyman; born in Frederick co., Md., March 18, 1823. In 1858 he was called to the Church of

the Holy Communion in Philadelphia; became eminent as a preacher and in the affairs of the Lutheran Church.

Selasphorus, in ornithology, flame-bearers; a genus with eight species, ranging from Veragua in Central America to Mexico, thence along Western North America to Nootka Sound. The tail is spreading, and the outer tail feathers are pointed. The throat feathers are elongated at the side, and form a shield of brilliant coloring. The sound produced by their wings when in motion is a loud rattling noise, like the shrill chirrup of a locust.

Selfridge, Thomas Oliver, an American naval officer; born in Boston, Mass., April 24, 1804; was appointed to the United States navy in 1818, and commissioned a lieutenant in 1827. During the Mexican War he commanded the sloop "Dale" of the Pacific squadron, and took part in the engagements at Matanzas and Guaymas, and in the Civil War served on the steam-frigate "Mississippi" in the Gulf squadron. Later he was promoted rear-admiral; commanded the Mare Island navy yard in San Francisco, Cal.; and was president of the naval examining board. He was retired in 1866. Died 1902.

Selfridge, Thomas Oliver, Jr., an American naval officer; born in Charlestown, Mass., Feb. 6, 1836; son of the preceding; was graduated at the United States Naval Academy in 1854. During the Civil War he was serving on board the "Cumberland" when she was sunk by the "Merrimac" in Hampton Roads in 1862; commanded the ironclad "Cairo," which was blown up on the Yazoo river; had charge of a battery at the capture of Vicksburg; participated in both attacks on Fort Fisher, and commanded several vessels in the Mississippi fleet. He was promoted commander in 1869 and had charge of the surveys for the canal across the Isthmus of Darien in 1869–1873; was a member of the International Congress at Paris in 1876 and in 1896 was promoted rear-admiral. He was retired, Feb. 6, 1898.

Seligman, Edwin Robert Anderson, an American educator; born in New York city, April 25, 1861; was graduated at Columbia University in 1879; then studied abroad; became Professor of Political Economy and Finance at Columbia University in 1891; editor of the "Political Science Quarterly."

Seljuks, a division of the Hoei-he collection of the Turkish tribes, who were settled on the Jaxartes and in Transoxiana in the 11th century, when they became converts to Islam. Togrul Beg, grandson of a chief named Seljuk, severely crippled the empire of Ghazni (1040); turning W. conquered Persia, and 10 years later he marched on Bagdad, to the assistance of the Abbasside Caliph. Togrul being of the orthodox Sunnite faith, was nominated by the caliph "Commander of the Faithful." Dying in 1063, Togrul was succeeded by his nephew Alp Arslan. This sovereign wrested Syria and Palestine from the rival Fatimite caliph of Egypt, and in 1071 defeated the Byzantine emperor Romanus Diogenes, and captured him. The price of his release was a heavy ransom and the cession of great part of Anatolia or Asia Minor to the Seljuk. Alp Arslan was stabbed by a captive enemy in Turkestan (1072), and was succeeded by his son Malik Shah. His reign is chiefly remarkable for the enlightened rule of his grand vizier, Nizam ul-Mulk, the schoolfellow of Omar Khayyam, the poet.

After the death of Malik (1092) the extensive empire began to break up into smaller kingdoms. During his lifetime, and that of his predecessors, powerful tributary princes had ruled over separate provinces in Syria, Kerman and Asia Minor. During the first half of the 12th century the most powerful of these provincial rulers was Sinjar, who governed Khorassan. He spent his life fighting against the Ghaznevids, the Turkestan chiefs, and the Mongols. It was the rulers of these two provinces or kingdoms who persecuted the Christian pilgrims and so provoked the Crusades, and it was the rulers of the same two kingdoms against whom the crusaders of Europe principally fought. A memorable line of rulers made Iconium their capital in the first half of the 12th century. This dynasty reached the acme of its power under Kaikavus (1211–1234), who ruled over nearly the whole of Asia Minor and extensive territories in Mesopotamia and Northern Persia.

During the reign of his son Kaikhosran II. the poet Jelal-ed-Din Rumi flourished and the various orders of dervishes arose; and at the same time the Mongols began to threaten the E. borders of the state. From about 1243 the real sovereign power of that part of Asia was in the hands of the Mongol chiefs, Hulagu and his successors, till the rise of the Ottoman princes. These last, Turks like the Seljuks, had retreated W. before the all-conquering Mongols about the middle of the 13th century, and at the end of it they entered the service of the Seljuk ruler of Asia Minor. After that the name Ottoman superseded that of Seljuk as the appellative of the Turkish rulers. The Seljuks, had centuries before, lost a good many of their peculiarly Turkish characteristics and had become "Turkomans," "Like the Turks"; and with their conversion to Islam they adopted the Perso-Arabian civilization and customs.

Selkirk, Alexander, a Scotch adventurer; born in Largo, Scotland, in 1676. He was a skillful seaman, and made several voyages to the South Sea, in one of which, having quarrelled with his commander, he was put ashore on the island of Juan Fernandez, with a few necessaries, a fowling-piece, gunpowder, and shot. Here he lived alone during four years and four months, and was then rescued by Captain Woods Rogers. During the time of his remaining on the island he had nearly forgotten his native language. He returned to England in 1711, and is said to have given his papers to Defoe, who took from them his story of "Robinson Crusoe." He died on the ship "Weymouth," in 1723.

Selling Short, a proceeding in the stock market conducted as follows: A customer X directs broker A to sell short 100 shares of Union Pacific at par. Broker B buys it. A, not having the stock, goes to broker C, and borrows from him 100 shares of Union Pacific, giving as security $10,000 in cash. This stock is then delivered by A to B, who pays A $10,000 therefor. Matters then rest till Union Pacific advances or declines enough to make X wish to close his account, he then directs A to buy Union Pacific, say at 95 and A gets the stock from Broker D. The stock thus obtained is delivered to C, who thereupon returns the money which he has had as security and $9,500 of the amount goes to D, leaving $500 less expenses as the profit of X on the transaction. While X is waiting to see what the market is going to do, C has the use of A's $10,000, and under ordinary conditions pays interest on this money. This interest is called the loaning rate on stocks and is usually a little below the current rate for loans on collateral.

Semaphore, a kind of telegraph or apparatus for conveying information by visible signs, such as oscillating arms or flags by daylight, and by the disposition of lanterns by night.

Sembrich, Marcella, an Austrian opera singer; born in Lemberg, Austria, Feb. 18, 1858. Her first appearance was at Athens, where her singing attracted considerable attention. Subsequently she appeared in all the large cities of Europe with great success, and in 1883 came to the United States. She reappeared in concerts in United States in 1897–1898, and was a member of the Grau Opera Company.

Semele, in classical mythology, a daughter of Cadmus by Hermione. She was beloved by Jupiter; but Juno, determining to punish her rival, visited the house of Semele in the guise of her nurse, and persuaded her to entreat her lover to come to her with the same majesty as he approached Juno. Jupiter had sworn by the Styx to grant Semele whatever she required; he therefore came attended by the clouds, the lightning, and thunderbolts. Semele, unable to endure so much majesty, was instantly consumed by fire. Her child was, however, saved from the flames by Mercury. This child was called Bacchus, or Dionysius.

Seminoles, a tribe of American Indians, originally a branch of the Creeks. In 1805, they aided in driving the Appalaches from Florida; and in 1817, they joined with the Creeks and some negroes who had taken refuge with them, ravaged the white settlements in Georgia. General Jackson, sent to punish them, took at the same time several Spanish forts, and hastened the negotiations which ended in the cession of Florida to the United States. By this cession, in 1823, the

Seminoles engaged to retire into the interior and not molest the settlers; but as the negroes continued to take refuge with them, a treaty was made with some of the chiefs, in 1832, for the removal of the whole tribe W. of the Mississippi. This treaty was repudiated by the tribe, at the instigation of Osceola, one of their chiefs. A war then commenced which ended in 1842, when the Seminoles were removed to the Indian Territory, where nearly all the members of the tribe are now settled, a few, however, are still to be found in Florida.

Semipalatinsk, or **Semipolatinsk,** a fortified town of Siberia, on the Irtish. Pop. 26,353. The province of Semipalatinsk has an area of 184,631 square miles. It is mountainous in the S. E., and consists of steppe land in the N. W. Pop. 685,197.

Semiramis, a queen of Assyria, As the story goes, she was a daughter of the fish goddess Derceto of Ascalon, in Syria, by a Syrian youth. Being exposed by her mother, she was miraculously fed by doves till discovered by the chief of the royal shepherds, who adopted her. Attracted by her beauty, Onnes, governor of Nineveh, married her. She accompanied him to the siege of Bactra, where by her advice, she assisted the king's operations. She became endeared to Ninus, the founder of Nineveh (about 2182 B. C.), but Onnes refused to yield her, and being threatened by Ninus, hanged himself. Ninus resigned the crown of Semiramis, and had her proclaimed Queen of Assyria. She built Babylon, and rendered it the mightiest city in the world. She was distinguished as a warrior, and conquered many of the adjacent countries. Having been completely defeated on the Indus, she was either killed or compelled to abdicate by her son Ninyas, after reigning 42 years. According to popular legend, she disappeared or was changed into a dove, and was worshiped as a divinity.

Semites, a name given to a group of nations closely allied in language, religion, manners, and physical features, who are represented in Gen. x. as descended chiefly from Shem, a son of Noah. Their habitat is Abyssinia, Arabia, Palestine, Phœnicia, Syria, and the countries of the Euphrates and Tigris.

Semitic Languages, the languages spoken by the Semitic nations.

Semi-Universalists, a name given to those members of the Reformed Churches in Germany who held that God wishes to make all men happy, but only on condition of their believing.

Semmes, Alexander Jenkins, an American surgeon; born in Georgetown, D. C., Dec. 17, 1828; was graduated at the National Medical College, Washington, in 1854. He later settled in New Orleans; was made a surgeon in the Confederate army in 1861, and was with Gen. Thomas J. Jackson in Virginia till 1862, when he was appointed medical inspector of the Department of Northern Virginia. In 1863 he was inspector of hospitals in the Department of Virginia. In 1870–1876 he was Professor of Physiology at the Savannah Medical College. He afterward joined the Roman Catholic Church, and in 1886 was made president of Pio Nono College, Macon, Ga.

Semmes, Raphael, an American naval officer; born in Charles co., Md., Sept. 27, 1809; was appointed, in 1828, a midshipman on board the "Lexington," and rose by successive steps to the rank of commander in 1855. He was nominated, in 1858, secretary to the Lighthouse Board, which situation he held when the war broke out. He then joined the Confederate service, March 26, 1861. He was ordered to take the command of a vessel built in England, which became famous as the "Alabama." The "Alabama," which had been into Cherbourg, France, for repairs, encountered outside the harbor a United States war steamer, the "Kearsarge," Capt. John A. Winslow, June 10, 1864, and the fight which took place about 9 miles out was both short and decisive. In rather more than an hour from the beginning of the fight the "Alabama" was completely disabled. The crew tried to reach the French coast with her, but failed in the attempt, and she began to sink. Commander Semmes, and some of the sailors, including 13 officers, were saved by the boats of an English steam yacht, the "Deerhound," which had accompanied the "Alabama" from Cherbourg to be a spectator of the fight. Semmes suc-

eded, after some difficulty, in making s way back to the Southern States; ut the effectual blockade of their orts deprived him of any further iance of continuing his adventurous reer. He died in Mobile, Ala., Aug.), 1817.

Semnopithecus, sacred monkeys, cred apes; distinguished by the pres- ce of a small functional thumb and eir absence from Africa. The spe- es are numerous, spread over almost e whole of the Oriental region.

Senate, in ancient history, the de- berative assembly of the Roman peo- e; but the term has been applied to ry different powers and constitu- ons in different countries.

In the United States the higher anch of Congress; composed of two nators from each State, irrespective the population therein, who are ected by the State Legislatures. ome of the most important functions the Senate, as distinct from the louse, are the supervision of the residential appointments of the high- t grade of public officers, the passing judgment on all treaties contracted ith foreign powers, and the sole ower to try all impeachments. In ie latter case impeachment proceed- gs must originate in the House, hich presents the charges to the Sen- te; this, in turn, acts as the court. he Vice-President of the United tates is president of the Senate, but as no vote except in the case of a tie.

In France the upper legislative hamber under Napoleon I., and Na- oleon III., was called the Senate, and ie name is still in use in the French epublic, and also in Spanish-America.

Seneca, Lucius Annæus, a Ro- an philosopher, son of M. Annæus eneca, an eminent rhetorician; was orn in Corduba, Spain, about the be- inning of the Christian era. Taken rly to Rome, he became an advo- ate, gained some distinction, and as made quæstor. Under Claudius, n accusation brought against him by ie infamous Messalina, led to his be- ig banished to Corsica. Returning fter an exile of eight years, he was ntrusted by Agrippina with the edu- ation of her son Nero. He was made onsul, A. D. 57. An attempt on Nero's part to poison him having failed, he was drawn into the Pisonian conspiracy, accused, convicted, and condemned. Left free to choose his mode of death, he opened his veins, and gradually succumbed to syncope, A. D. 65. His second wife, Pompeia Paullina, who wished to die with him, and actually had her own veins incised for the purpose, survived him a few years.

Seneca, Marcus Annæus, a Roman rhetorician; father of the preceding; a native of Corduba, in Spain; born about 61 B. C. He went to Rome during the reign of Augustus, and there taught rhetoric with great success for several years. He died in Rome toward the close of the reign of Tiberius (A. D. 37).

Seneca Indians, a tribe of North American Indians belonging to the Iroquois, and formerly occupying Western New York and a portion of Northwestern Pennsylvania. They were once powerful; and their most famous chief was Sagoyewatha, or "Red Jacket." They now occupy reservations in Kansas.

Senefelder, Aloys, the inventor of lithography; born in Prague, Bohemia, Nov. 6, 1771; died in Munich, Bavaria, Feb. 26, 1834.

Senega, or **Seneka,** the dried root of the rattlesnake root.

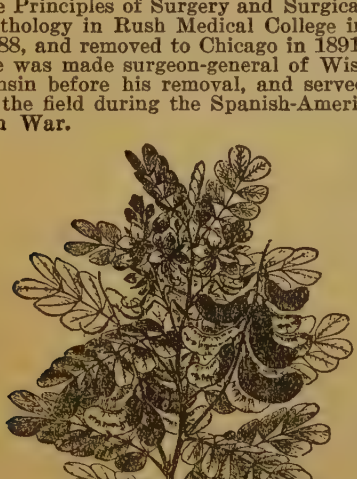
Senegal, or **French Senegambia,** a French colony; between the Sahara and the Gambia river; extends from the Atlantic on the W. to the French Sudan on the E.; area, about 80,000 square miles. The name Senegambia has been applied to this region, being compounded from the names of the rivers, Senegal and Gambia, between which it lies. Gold, silver, copper, and quicksilver are found. Much of the soil is rich. The natives cultivate millet, maize, and rice; other products are gums, castor-beans, ground nuts, cocoanuts, rubber, and kola. The domestic animals comprise cattle, sheep, goats, and camels. The native industries are weaving and the making of bricks, pottery, and jewelry. A railway connects the coast towns of Dakar and St. Louis.

For administrative purposes the colony is divided into four communes; St. Louis (the capital and residence of the governor of West Africa), Da-

kar, Goree, and Rufisque; nine circles; various countries directly under the French protection; and self-governing states which have accepted the French protectorate. In October, 1899, a portion of the West Sudan was placed under the same administration as Senegal. Pop. about 1,180,000.

Senegal Jackal, a well-marked variety of the jackal. It is larger than the common kind, more elegantly built, and has long legs, somewhat like a greyhound.

Senn, Nicholas, an American surgeon; born in Buchs, Switzerland, Oct. 31, 1844; removed with his parents to Ashford, Wis., in 1853; was graduated at the Chicago Medical College in 1868; removed to Milwaukee, Wis., in 1874. In 1885 became professor in the College of Physicians and Surgeons, Chicago; Professor of the Principles of Surgery and Surgical Pathology in Rush Medical College in 1888, and removed to Chicago in 1891. He was made surgeon-general of Wisconsin before his removal, and served in the field during the Spanish-American War.



SENNA: CASSIA OBOVATA.

Senna, in botany, various species of cassia.

Sennacherib, an Assyrian king, son of Sargon, whom he succeeded 705 B. C. He suppressed the revolt of Babylonia, and marched against the Aramæan tribes on the Tigris and Euphrates, of whom he took 200,000 captive. He then reduced part of Media; rendered tributary Tyre, Aradus, and other Phœnician cities; advanced on Philistia and Egypt, and finally proceeded against Hezekiah, King of Judah, who had revolted. Yielding to panic, Hezekiah paid the tribute exacted of 300 talents of silver and 30 talents of gold. On his return to Assyria Sennacherib again attacked Babylonia and afterward reinvaded Judah. Having marched through Palestine he besieged Libnah and Lachish, and wrote a threatening letter to Hezekiah; but in consequence of a miraculous visitation, which caused the death of 185,000 of his troops, Sennacherib returned to Nineveh and troubled Judah no more. He was murdered by his own sons Adrammelech and Sharezer, 681 B. C.

Sensation, the change in consciousness which results from the transmission of nervous impulses to the brain.

Sensationalism, in philosophy, the doctrine that knowledge is the outcome of sensation.

Sensitive Plants, the Mimosa pudica and M. sensitiva, which possess a vegetable irritability, causing them to shrink from the touch.

Sentence, in law, a judgment pronounced by a court or judge on a criminal; a judicial decision publicly and officially declared in a criminal prosecution. In grammar, a sentence is the form of words in which a thought or a proposition is expressed.

Sentinel, or **Sentry,** a private soldier, marine, or sailor posted at a point of trust, with the duty of watching the approach of an enemy or any person suspected of hostile intentions. During the night each sentry is instructed with the "word," or "countersign"; and no person, however, exalted in position, may attempt to approach or pass him without giving that as a signal.

Sentinel Crab, in zoölogy, Podophthalmus vigil, two to four inches long, from the Indian Ocean. The eyes are set on long footstalks, which, whe

animal is alarmed, are erected so to command an extensive view.

eoul, the capital of Korea; on the n river, 75 miles from its entrance o the Yellow Sea, and 57 miles from port Chemulpo, with which it has n connected by rail since July, 00. It lies in a natural basin, among nite hill ranges, and is surrounded h walls. The city includes several le, desolate squares. The royal ace and its adjuncts cover 600 acres ground. Silk, paper, tobacco, mats, s, and similar commodities are the ncipal products of native industry. ere are schools for the teaching of anese, French, Chinese, Korean, ssian, and English, and an Ameri- Mission School, which is subsi- ed. Pop. 201,000; including exten- suburbs, 300,000.

epal, in botany, the segments, isions, or leaves of a calyx.

Sepiadæ, the cuttlefish family distributed world-wide, and are n three inches to three feet long. e best known species is the common tlefish. It is also termed the ink . Beneath its throat is a bladder, which is secreted a black fluid, and ich, when pursued, it ejects, so ning the water that it easily es- es. It has the chameleon-like pow- of changing its color.

epoy, a slight alteration of the inary word used for centuries by natives of India for a soldier in eral, but confined by Anglo-Indians he Hindu and Mohammedan troops, ecially to those in British pay.

eptember (from the Latin sep-, seven), the ninth month of our r, but the seventh of the old Roman r, which began in March. It has ays contained 30 days.

Seraglio, the palace of the Sultan, upying a point of land between the den Horn and the Sea of Marmora, forming the E. portion of the city Constantinople. It is surrounded walls nearly 3 miles in circuit, contains government buildings, ques, gardens, baths, as well as the tan's harem, which occupies its in- enclosure, and consists of a group houses and gardens, each occupied one of the Sultan's wives. With exception of the harem, the serag- may be visited by strangers.

Seraphim, according to Isaiah vi: 2–6, creatures with hands, feet, six wings, and a human voice. The seraphim were God's messengers between heaven and earth. In short, the cherubim and the seraphim originally symbolized, the former storm clouds, which concealed the deity, or winds, and the latter the lightning (Ps. civ. 3, 4.)

Serapis, or **Sarapis** (also found as Osarapis), the Greek name of an Egyptian deity, introduced into Egypt in the time of Ptolemy I. or Soter, and really a combination of the Greek Hades and Egyptian Osiris. He was not an Egyptian, but the Greek deity, with some Egyptian characters superadded; and his temple was not admitted into the precincts of Egyptian cities, finding favor only in the Greek cities founded in Egypt. The god had a magnificent temple, the Serapeum, at Alexandria, to which was attached the celebrated library; another at Memphis, in the vicinity of the cemetery of the mummies of the Apis, and another temple at Canopus. It appears that he represented or was identified with the Hesiri Api, or Osorapis, the "Osirified" or "dead Apis," who was also invested with many of the attributes of Osiris. The worship of Serapis, introduced into Egypt by the Ptolemies, subsequently became greatly extended in Asia Minor; and his image, in alliance with that of Isis and other deities, appears on many of the coins of the imperial days of Rome. A celebrated temple of Serapis existed at Puteoli, near Naples, and the remains of it are still seen. In Egypt itself the worship of the deity continued till the fall of paganism, the image at Alexandria continuing to be worshipped till destroyed, A. D. 398, by Theophilus, archbishop of that city.

Serfs, a term applied to a class of laborers existing under the feudal system, and whose condition, though not exactly that of slaves, was little removed from it. There were two classes of laborers, the villeins and the serfs proper. The former occupied a middle position between the serfs and the freemen. A serf could not be sold but could be transferred along with the property to which he was attached. A serf could obtain his freedom by purchase, or by residing for a year and a day in a borough, or by military serv-

ice. By these various means the serf population gradually decreased. In most parts of the Continent they had disappeared by the 15th century. The extinction of serfdom in England and Scotland was very gradual. Serfdom in Russia was abolished by a manifesto of Alexander II. on March 17, 1861.

Sergeant, Thomas, an American jurist; born in Philadelphia, Pa., Jan. 14, 1782; was graduated at Princeton College in 1798, and admitted to the bar in 1802. He was made associate justice of the Philadelphia District Court in 1814; was Secretary of State in 1817–1819, and associate justice in the Pennsylvania Supreme Court in 1834–1846. He resumed practice in 1847. It is said that up to this time he was the only judge in Pennsylvania who had never had a decision reversed. He died in Philadelphia, Pa., May 8, 1860.

Sergeant, or **Serjeant.** In military language, the second permanent grade in the non-commissioned ranks of the army. In the United States service there are regimental as well as company sergeants. Their duties are mainly indicated by the title, which is a compound of sergeant with the superior officer or the department they are intended to serve; as, sergeant-major, color sergeant, etc.

Sergius, the name of several popes.

Sergius I.; born in Syria, about 630, succeeded Conova in 687. He died in Rome in 701.

Sergius II., was a native of Rome, and succeeded Gregory IV. in 844. He was elected without the authorization of the Emperor Lothaire, who dispatched an army into Italy, under the command of his son Louis. But the Pope succeeded in inducing that prince to retire, after having crowned him King of Italy. He died in 847.

Sergius III., became Pope in 904, through the influence of the Marquis of Tuscany and of the notorious Roman lady, Marozia. He died in 911.

Sergius IV., was elected Pope in succession to John XVIII., in 1009. Under his rule, and in consequence of his exhortation, the Italian princes combined to drive out the Saracens from the country. In his time, also, the Normans began to enter Italy. He died in 1012.

Serpent, in astronomy, one of th 48 ancient constellations extendin serpent-like through a wide expanse sky. The head is under Corona bore alis, the body winds through Ophiu chus, and the tail reaches the Milk Way near the constellation Aquila.

In music, an almost obsolete bas instrument of a powerful characte It is a wooden tube, about eight fee long, increasing conically from inc diameter at the mouth-piece to fou inches at the open end, twisted int U-shaped turns, followed by a larg circular convolution. This is covere with leather, and has a mouth-piec like a horn or trombone, and keys fo the several notes to be produced. I pyrotechny, a small paper tube, fille with mealed powder or rocket compo sition, not very compactly driven.

Serpent, in zoölogy, the ophidia, a order of reptiles popularly distin guished from the rest of the class b having a very elongated body and n external limbs. They are very widel distributed, abounding in the tropics where they attain their greatest size absent only from the Arctic and Ant arctic regions, and they are mentione in the earliest records of the huma race. The length of the body is marked feature.

Serpent Charming, an art great antiquity, confined in practic exclusively to Eastern countries. Se eral allusions are made to it in th Bible, and also in classical writer The power exercised by the charmer over poisonous serpents is unquestion ably remarkable, though there little doubt that the common practic of the charmers is to extract the fang before exhibiting their feats.

Serpentine, an abundant miner occurring in one or other of its nume ous varieties in all parts of t world. It contains some protoxide iron, and other impurities which cau a great variation in color, which often of a dull green, but is also ma bled and mottled with red and purpl It takes a high polish, and is turne into ornamental articles.

Serpent Worship, ophiolatry; t worship of serpents as symbols avatars of a deity, a branch of anim worship with a wide range in time a space. In modern times serpent wo

p is prevalent to a great extent in lia, and in Haiti, West Indies.

erre1, Edward Wellman, an erican engineer; born in New York y, Nov. 5, 1826; was assistant en- eer of the Central Railroad of New sey in 1845, and of the Panama rvey in 1848; superintended the ilding of the Niagara suspension dge in 1850; had charge of the osac tunnel in 1858; and directed e construction of the Bristol bridge er the Avon river, England. In the vil War he served as chief engineer the Army of the James; designed d superintended the construction of e "Swamp Angel" battery that mbarded Charleston; suggested ny valuable improvements in guns d processes; and was brevetted igadier-General of volunteers in 65. Subsequently he settled in New rk city, and engaged principally in e building of railroads.

Sertorius Quintus, a Roman gen- al; a native of Nursia, in the coun- of the Sabines. He served under rius in the Cimbric war, afterward Spain, and was made quæstor 91 C. He joined the party of Marius the Civil War, and commanded the nna at the siege of Rome 87 B. C.; pointed prætor in 83, he went soon er to Spain, where his courage and ll as a soldier were well known. had to retire before the forces of lla, and went to Africa; but on the itation of the Lusitanians, returned d put himself at their head to fight independence. His progress was id, and he made himself master of greater part of Spain. Metellus s was sent against him in 79, but ld effect nothing; two years later mpey joined Metellus, but Sertorius nforced by Perperna held out inst both till 72. He entered into otiations with Mithridates, which sed fresh alarm at Rome. He was assinated by Perperna, his ally, at anquet 72 B. C.

Serum, in anatomy, a pale yellow- liquid obtained by drawing blood m the vessels and allowing it to arate into a thicker and a thinner tion. The thinner one is the serum.

Serval, the Felis serval, the bush , or African tiger-cat, distributed r Africa, abounding in the S. Its body is proportionately longer, and its tail shorter than those of the true cats, in this respect approaching the lynxes. It is found in the extensive grassy plains, where it prays on antelopes and other small game.

SERVAL OR BUSH CAT.

Servia (Slavonic, Serbia; Turkish, Syrp), an independent kingdom of Eastern Europe; area, 19,050 square miles; pop. 2,312,484. Capital, Belgrade; pop. 59,494. The surface of Servia is elevated and is traversed by ramifications of the Carpathians in the N. E., of the Balkans in the S. E., and of the Dinaric Alps in the W. The summits seldom exceed 3,000 feet, though the highest reaches 6,325. The whole surface belongs to the basin of the Danube. The climate is somewhat rigorous in the elevated districts, but mild in the valleys and plains. There are extensive forests and uncultivated wastes, the forest area being 42 per cent. of the total area. The chief agricultural products are maize, wheat, flax, hemp, and tobacco. Wine is grown in the districts adjoining Hungary, and the cultivation of prunes is extensive. Lead, zinc, quicksilver, copper, iron and coal are found. The bulk of the trade is with Austria. In 1898 there were 354 miles of railway and 2,526 miles of telegraph. The great majority of the inhabitants are Slavonians, and adhere to the Greek Church. The Servian language, formerly often called the Illyrian, is a melodious Slavonic dialect closely allied to the Bulgarian and Slovenian, and forms with them the southern Slavonic group. The present constitution of Servia dates from 1889. The government is an hereditary monarchy, and the people are represented by an elected legislative assembly.

Servia was anciently inhabited by

Thracian tribes; subsequently it formed part of the Roman province of Mœsia. It was afterward occupied in succession by Huns, Ostrogoths, Lombards, Avares, and other tribes. The Servians entered it in the 7th century, and were converted to Christianity in the next century. They acknowledged the supremacy of the Byzantine emperors, but latterly made themselves independent, and under Stephen Dushan (1336–1356) the kingdom of Servia included all Macedonia, Albania, Thessaly, Northern Greece, and Bulgaria. About 1374 a new dynasty ascended the throne in the person of Lazar I., who was captured by the Turks at the battle of Kossova (in Albania) in 1389, and put to death.

In the prolonged struggle for freedom from the Turkish yoke, in the early part of the 19th century two families became prominent, that of Black George, or the Karageorgevitch family, and that of Milos T. Obrenovitch, both of humble origin. Milos T. Obrenovitch was acknowledged Prince of Servia by Turkey in 1829, and the reins of power afterward alternated, through assassination and other causes, between the two houses. Servia took advantage of the defeat of Turkey by Russia to make war on Turkey, and by the Treaty of Berlin in 1878 Servia was recognized as independent, and the reigning prince, Milan Obrenovitch, afterward assumed the title of king. He was a worthless and dissolute man, unjustly divorced his wife Natalie, was defeated by the Bulgarians in 1885, and abdicated in 1889. His son, Alexander succeeded to the crown, under a regency, and in 1893, when 17 years of age he took the royal authority in his own hands. He married a widow named Draga, and the pair became very unpopular, and were both murdered most cruelly in their palace by military conspirators on the night of June 10, 1903. This ended the Obrenovitch dynasty, and Peter Karageorgevitch was invited from exile, and became king of Servia, as Peter I.

Service Men of the Spanish War, an association organized at Lexington, Ky., Nov. 5, 1898. The founders of the new society made choice of the designation "service men" as equally distinctive of the men who waited in vain for orders to go to the front, and the more favored ones who were in actual conflict.

Servitude, a state or condition of a serf, slave, or bondman; state of voluntary or involuntary subjection to a master or employer; service; slavery; bondage.

Servius Tullius, the 6th king of Rome. According to the tradition he was the son of a slave given by the elder Tarquin to Tanaquil, his wife. He married Tarquin's daughter, and on the death of his father-in-law (578 B. C.) he was raised to the throne. He defeated the Veientines and the Etruscans, and divided the population of Rome into tribes. According to the common story Servius married his two daughters to the grandsons of his father-in-law; the elder to Tarquin and the younger to Aruns. The wife of Aruns murdered her own husband to unite herself to Tarquin, who had assassinated his wife. Servius was murdered by Tarquin, and his own daughter Tullia ordered her chariot to be driven over the mangled body of her father (534 B. C.).

Sesame, an annual herbaceous plant cultivated throughout the East from Egypt to Japan for the sake of the seeds, which yield gingili oil. The oil is used in cookery — as a substitute for butter — for lighting, and for the purposes of lubrication. It is inodorous, has a sweet taste, and keeps for years without becoming rancid. In Egypt and Arabia it is preferred to olive oil. Egyptian women consider it the best of cosmetics and the most perfect preservative of the hair. The oil cake, mixed with honey and preserved citron, is an Oriental luxury. The leaves of sesame abound in a gummy substance, which they readily impart to water, making a mucilage used in the S. parts of the United States as a demulcent drink.

Sesostris, the most celebrated of the early kings of Egypt. He, on succeeding to the throne, became ambitious of military fame, and marched at the head of a numerous army to make the conquest of the world. He marched through Asia, and penetrated farther into the East than the conqueror of Darius. He also invaded Europe. In his old age, Sesostris having grown infirm and blind, de

troyed himself. The time of Sesostris is placed from 1400 to 1250 B. C. Sesostris, so called by the Greeks, is identical with Rameses II., one of the most famous of the Pharaohs.

Sesterce, a Roman coin, the fourth part of the denarius, containing at first two libræ. The name is an abbreviation of the Latin semis-tertius, which was their mode of expressing two, and their custom was to derive the names of all their coins from the foundation of their money system, the as. Later when the denarius was made to contain 16 asses, the sesterce contained 4.

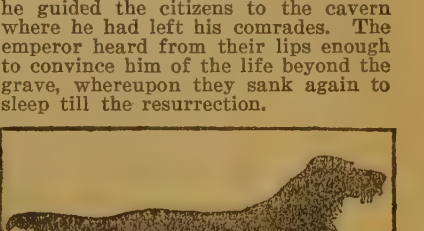
Sethos I., or **Seti,** an Egyptian monarch, the second Pharaoh of the XIX. dynasty; which lasted from 1462 B. C. to 1288 B. C. He seems to have been one of the shepherd race in the E. part of Delta. He was distinguished as a builder and a warrior, erecting the temples of Osiris at Abydos, the "hall of columns" in his palace at Karnak, and establishing the power of Egypt over Western Asia. He reigned about 30 years.

Seton, Elizabeth Ann, an American philanthropist; born in New York city, Aug. 28, 1774; was the founder of the order of Sisters of Charity; established the nucleus of that society at Emmetsburg, Pa., in 1809, and sent the first colony of the Sisters to Philadelphia, Pa., and another to New York city in 1817. At the time of her death she had established 20 communities. She died in Emmetsburg, Md., Jan. 4, 1821.

Setter, a breed of dog employed in shooting, where he fills the same vocation as the pointer. The setter is divided into three varieties — the English setter, the Gordon setter, which is native to Scotland, and the Irish setter. There was also at one time a variety known as the Welsh setter, but it is now extinct, and probably never differed from the English setter.

Seven Pines, the name of a locality in Virginia, 6 miles from Richmond, where, May 31, 1862, the Confederates, commanded by Generals Longstreet and Stuart, defeated the Nationals under General Casey. The battle received its name from seven solitary pine trees at the spot where the fiercest fighting took place.

Seven Sleepers, the heroes of a celebrated legend. According to the story, during the flight of the Christians from the persecution, seven Christians of Ephesus took refuge in a cave near the city, where they were discovered by their pursuers, who walled up the entrance in order to starve them to death. They fell instead into a preternatural sleep, in which they lay for nearly 200 years. This is supposed to have taken place in 250 or 251; and it was not till the reign of Theodosius II. (447) that they awoke. They imagined that their sleep had been but of a single night; and one of the seven went secretly into the city to purchase provisions, and he was amazed to see the cross erected on the churches and other buildings. Offering a coin of Decius in a baker's shop he was arrested, his startling story not being believed till he guided the citizens to the cavern where he had left his comrades. The emperor heard from their lips enough to convince him of the life beyond the grave, whereupon they sank again to sleep till the resurrection.



SETTER "HEATHER GROUSE."

Seventeen-Year Locust, the Cicada septendecim. There is no insect known which affords such an interesting study as does this locust. He begins and ends life in the bright sunshine, but spends 17 years in the earth — more than two years in darkness for every week in light. Safely hidden from sight he gnaws away at the roots of trees, does his best to kill them, and then, emerging into the light, completes the death dealing operation by making as vicious an attack on the branches as was made on the

roots. Its habits and life history in some respects almost pass belief. When the insect emerges from the ground after its 17 years' burial it works its body rapidly backward and forward like a man trying to put on an extremely tight coat. The result of the movement is the breaking of the shell which covers the creature and the immediate appearance of its wings. The remarkable power of instinct is shown as soon as the insect is freed of its enveloping armor. It makes instantly for the nearest tree. The locusts pair at once.

The females prepare the nest by clasping a branch of moderate size and perforating it with holes by means of

SEVENTEEN YEAR LOCUST.

an awl-shaped piercing instrument with which they are provided. They repeatedly thrust this piercer obliquely into the bark and wood in the direction of the fibers, at the same time putting in motion lateral saws which detach little splinters of wood and make a fibrous lid over the whole. In each fissure made by the piercer the female deposits from 10 to 20 eggs in pairs. It takes her a quarter of an hour to prepare one nest and fill it with eggs and she usually makes between 15 to 20 fissures in one limb. She lays between 400 and 500 eggs and then dies.

The perforations made by the females in the limbs cause their death, and that orchard which receives a visit from the seventeen-year locusts soon stands a brown and blasted ruin. Six weeks after the eggs are laid they hatch. The young are grublike in form and have six legs, the first pair of which are large and are shaped like lobster claws, having strong spines beneath. On the shoulders, where 17 years later the wings appear, are little protuberances and directly under the breast is a long beak for suction. After being hatched the young locusts deliberately loosen their hold on the limb and fall to the earth. They instantly dig their way into the ground where they seek out the tender roots of plants and trees. These they cut with their beaks and draw out the vegetable juices which constitute their sole nourishment — and thus it is for 17 long years.

The drums of the male locusts, on which they perform during their short lives above ground, are formed of convex pieces of parchment gathered into numerous fine plaits and are lodged in cavities behind the thorax. The insects play on these drums by the means of muscles which contract and relax with great rapidity. One has to hear a concert of the seventeen-year locusts to realize the numerical strength of the chorus and its tremendous volume of sound.

Seventh-Day Baptists, a body of Christians who assumed their present denominational forms as "Sabbatarian Baptists" in England, during the English Reformation. Their distinctive doctrines were first preached by John the Baptist. Sabbath-keeping, as obedience to God's law, and baptism as the symbol of a new life after repentance, are fundamental facts in the early history of Christianity. In these facts Seventh-day Baptists find the warrant for their denominational existence. On these points they claim to be identical with the New Testament Church.

The churches in the United States were the result of emigration from England. The first Seventh-day Baptist Church in America was organized at Newport in 1671. A second branch was founded near Philadelphia, about 1700. A third was founded in Northern New Jersey in 1705. From these three points the denomination has spread slowly W. and S. In 1818 the General Conference adopted Seventh-day Baptists, instead of Sabbatarian as the denominational title. In 1900 the denomination reported 115 churches; 119 ministers, 8,991 members.

Seventh-Day German Baptists an offshoot from the Dunkers, in Germany, about 1728. Branches were established in York and Bedford cos

Pa., in 1763. Their principal settlement is Snow Hill, Franklin co., Pa.

Seven Wonders of the World, in ancient times, the Pyramids of Egypt, the Hanging Gardens of Semiramis at Babylon, the Temple of Diana at Ephesus, the Statue of Jupiter at Athens by Phidias, the Mausoleum, the Colossus at Rhodes, and the Pharos of Alexandria.

Seven Years' War, a famous European war which lasted from 1756 to 1763. As the result of a war with Prussia Maria Theresa of Austria had to cede Silesia to Frederick the Great. With a view to recover her lost territory she concluded an alliance with Russia, secured the support of Poland and Saxony, and attempted to form a closer union with France. In the meantime war broke out between France and England (1755), and George II., in order to protect his German states, concluded an alliance with Prussia, while France agreed to aid Austria against Frederick. Being informed of these negotiations Frederick resolved to anticipate his enemies. In August, 1756, he invaded Saxony, occupied the chief towns, and compelled the Saxon army to surrender. This step created a stir in the European courts, and in 1757 Austria, Russia, France, Sweden, and the German empire were in arms against Frederick, while he had no ally but England and a few German states. In 1757 Frederick marched into Bohemia and gained a bloody battle at Prague (May 6). Soon after, however, the Austrians under Daun defeated Frederick at Kollin (June 18), relieved Prague, and forced the Prussians to retreat to Saxony and Lusatia. The French army, after defeating Frederick's German allies (under the Duke of Cumberland) at Hastenbeck, united with the imperial forces; Frederick met them at Rossbach and routed both armies on Nov. 5. He then hurried back to Silesia, which was occupied by the Austrians, and vanquished a superior army under Daun at Leuthen (Dec. 5), thus recovering Silesia. While Frederick was thus occupied in the S. and W., his general Lehwald had successfully repelled the Swedes and Russians on the N. and E.

The next campaign was opened in February, 1758, by Ferdinand, Duke of Brunswick, who, at the head of Frederick's allies, opposed the French in Lower Saxony and Westphalia. He defeated the French at Krefeld in June, and ultimately drove the enemy behind the Rhine. Frederick, driven out of Moravia, defeated the Russians, who had advanced to Zorndorf, in Brandenburg, was defeated in turn by Daun at Hofkirchen, but before the end of the year drove the Austrians from Silesia and Saxony. Louis XV. and his mistress. the Marchioness de Pompadour, were bent on continuing the war, and concluded a new alliance with Austria, Dec. 30, 1758. Frederick, however, had also obtained a new treaty with Great Britain, which promised him a large yearly subsidy. The new campaign was opened in March, 1759, Prince Henry, Frederick's brother, marching into Bohemia, where he dispersed the hostile forces, and captured immense quantities of military stores. The Russians, having defeated the Prussian general Wedel near Zullichau (July 23), advanced to Frankfort-on-the-Oder. Frederick hastened to meet them in person, and had already defeated them at Kunersdorf (Aug. 12) when his victory was snatched from him by the Austrians under Laudon, who inflicted on him a defeat such as he had never sustained before. Frederick's position was now extremely precarious. The Russians were victorious in his hereditary states, Daun was in Lusatia with a large army, and Saxony was overrun by the imperial troops. In the W. Frederick's allies had been more successful. On Aug. 1 Ferdinand gained a splendid victory at Minden over the French troops under Contades and Broglio. On the same day his nephew defeated the French at Gohfeld, and they were driven over the Lahn on one side and over the Rhine on the other. The Swedes, also, who, after the battle of Kunersdorf invaded Prussian Pomerania, were driven by Manteuffel and Platen under the cannon of Stralsund. The campaign of 1760 seemed at first to forebode ill success to Frederick. While he himself was engaged in Saxony Fouque suffered a defeat in Silesia, in consequence of which the Austrians occupied the whole country. Frederick thereupon gave up Saxony in or-

der to recover Silesia. On Aug. 15 he defeated Laudon at Liegnitz, by which he effected his purpose of recovering Silesia. He then returned to Saxony and attacked the imperial forces at Torgau, on the Elbe (Nov. 3), defeated them in a bloody engagement and went into winter quarters in Saxony. The Russians also were forced to retire to Poland, and Ferdinand defeated the French at Marburg (July 31).

In the campaign of 1761 the operations of Ferdinand of Brunswick and the French on the Rhine consisted of alternate advances and retreats, and the Russians and Austrians were so enfeebled that they failed to make any impression on Frederick's remnant of an army. In the campaign of 1762 the French were defeated (June 24) at Wilhelmsthal, and Cassel surrendered to the allies on Nov. 1. Two days after this the preliminaries of peace between Great Britain and France were signed, and the peace itself was confirmed at Paris, Feb. 10, 1763. After a short negotiation Frederick concluded a peace with Austria and Saxony at Hubertsburg (Feb. 15), by which he retained Silesia. The war in Europe was accompanied by war by sea and land between the French and British abroad, the result of which was to give Great Britain a decided superiority over France both in America and India.

Severus, Lucius Septimius, a Roman emperor; born near Leptis Magna, on the coast of Africa, April 4, 146. After holding the highest offices under Marcus Aurelius and Commodus, he obtained command of the legions in Gaul, and when in 193 news came of the murder of Pertinax, he was proclaimed emperor. Meanwhile the Roman legions in Asia had proclaimed their general, Pescennius Niger, emperor. Severus overthrew him at Issus in 194. After a successful campaign against the Parthians, he returned to Rome, but was soon engaged in a struggle with another rival, Clodius Albinus, whom he conquered at Lugdunum in 197. New campaigns in the E. were ended by the capture of Ctesiphon, the Parthian capital. Severus then spent several years (202–208) at Rome, gratifying the people by his magnificence, and distributing large donations to the troops. In 208 he hastened to Britain to quell a rebellion there; but after an undecisive campaign, and just as he was planning a new attack on the Caledonians, he died in Eboracum (York), Feb. 4, 211.

Severus, Wall of, the name given to the wall or barrier formed at the boundary of the Roman empire in Britain between the Solway and the Tyne by the Roman emperor Severus about A. D. 210, following the line of a similar structure made in the reign of Hadrian (A. D. 120), and usually called Hadrian's Wall.

Seville (Spanish Sevilla), a famous city of Spain; capital of the province of the same name; on the left bank of the Guadalquivir, 80 miles from its mouth, and 353¾ miles S. S. W. of Madrid. The river is crossed by a fine iron bridge connecting Seville with Triana, one of its suburbs. The city has many fine promenades, of which the most frequented are the Alameda Vieja, El Paseo de Christina and Las Delicias.

The Cathedral (1401–1519), on the site of the grand mosque of the Moors, is one of the most imposing Gothic edifices in Europe. It is 431 feet long, 315 feet wide, 145 feet high under the transept dome, has seven aisles, 93 windows, several of which are beautifully painted, and an organ with 5,400 pipes. It contains the "Biblioteca Columbiana" of 20,000 volumes, bequeathed by Ferdinand Columbus, and is rich in paintings by Murillo, Campana, the Herreras, and other masters of the school of Seville. The Alcazar was the ancient Moorish palace. Some parts of its interior are as fine as the Alhambra. The Lonja, or Exchange, is a square building, each side 100 feet long, in which all the American archives are preserved. Other buildings are the Torre del Oro, a 12-sided tower on the river, so called from its having received the cargoes of the American treasure ships; the palace San Telmo, built by Ferdinand Columbus, and the great amphitheater, capable of accommodating, as a Plaza de Toros, 18,000 people.

One of the greatest monuments of antiquity is the Canos de Carmona, an aqueduct on 410 high arches, which conveys water from Alcala de Gua-

daira. It was built by the Romans and repaired by the Moors. Seville has a university, founded 1504, two theaters, several upper schools and learned societies. The city is visited by large numbers of strangers during the Santa Semana ("holy week"), which commences about the middle of April. Pop. 118,888.

Sewage, the matter which passes through the drains, conduits, or sewers leading away from human habitations singly, or from houses collected into villages, towns, and cities. It is made up of excreted matter, solid and liquid, the water necessary to carry such away, and the waste water of domestic operations; but to these are added the liquid waste products of manufacturing operations, and generally much of the surface drainage water of the area in which the conveying sewers are situated.

Sewall, Frank, an American writer and Swedenborgian minister; born in Bath, Me., Sept. 24, 1837; was graduated at Bowdoin College in 1858; studied in the universities of Tubingen and Berlin, Germany, and attended lectures at the Sorbonne; was pastor in Ohio and Glasgow, Scotland; president of Urbana University, O., for 16 years; after 1890 at Washington, D. C. He wrote many denominational and religious works.

Sewall, Harriet (Winslow), an American poet; born in Portland, Me., June 30, 1819. She died in Wellesley, Mass., in February, 1889.

Sewall, Jonathan Mitchell, an American poet; born in Salem, Mass., 1748. During the Revolutionary War he wrote a ballad, "War and Washington," which was very popular; in his epilogue (1780) to Addison's "Cato" occurs the line "No pent-up Utica contracts your powers." He died in Portsmouth, N. H., March 29, 1808.

Sewall, Samuel, an American jurist; born in Bishopstoke, England, March 28, 1652. He came to America very young, was graduated at Harvard in 1675, and became a member of the council; and as judge of the probate court (1692) took a prominent part in the trials during the Salem witchcraft excitement. He is chiefly remarkable in literary annals for his "Diary" and "Letters," which have been published by the Massachusetts Historical Society. He died in Boston, Mass., Jan. 1, 1730.

Sewall, Stephen, an American Hebrew scholar; born in York, Me., April 4, 1734. He became librarian and instructor at Harvard College (1762), and Professor of Hebrew 1764–1785). He left a manuscript "Chaldee and English Dictionary," now preserved in Harvard College Library. He died in Boston, Mass., July 23, 1804.

Seward, Frederick William, an American lawyer; born in Auburn, N. Y., July 8, 1830; was graduated at Union College in 1849; admitted to the bar in 1851; and for 10 years was one of the editors and owners of the Albany "Evening Journal." He was sent to warn Abraham Lincoln of the plot to assassinate him in Baltimore in 1861; was assistant Secretary of State in 1861–1869 and 1877–1881; accompanied Admiral Porter on the special mission to negotiate West India treaties in 1867; participated in the purchase of Alaska; was a member of the New York Legislature in 1875.

Seward, George Frederick, an American diplomatist; born in Florida, N. Y., Nov. 8, 1840; was educated at Union College; was United States consul and consul-general to Shanghai, China, in 1861–1876, and minister to China in 1876–1880. During his diplomatic career he was largely instrumental in reducing riots and piracy in China. In 1893 he became president of the Fidelity and Casualty Company of New York.

Seward, William Henry, an American statesman; born in Florida, Orange co., N. Y., May 16, 1801. He studied for the bar, and began practising in Auburn in 1823, but gradually drifted into politics, and in 1830 was elected a member of the New York Senate. Displaying marked abilities as a politician he was in 1838 and 1840 chosen governor of his native State, and in 1849 was elected to the United States Senate. In 1860 he was a candidate for the presidency, but being defeated in the convention by Abraham Lincoln he exerted himself to secure Lincoln's election. Lincoln afterward appointed Seward Sec-

retary of State, in which post he discharged his duties with great ability, showing notable tact in dealing with Great Britain in the "Trent Affair," inducing France to withdraw her troops from Mexico, and effecting the cession to the United States by Russia of Alaska (1867). He was dangerously wounded in April, 1865, when President Lincoln was assassinated, but recovered and filled the same office under Lincoln's successor, Andrew Johnson. He resigned his post on the accession of President Grant in 1869. He died in Auburn, Cayuga co., N. Y., Oct. 10, 1872. He did inestimable service to his country not only in the Civil War, but in compelling the French to leave the pretended emperor Maximilian to his fate in Mexico.

Sewell, William Joyce, an American statesman; born in Castlebar, Ireland, Dec. 6, 1835; came to the United States in 1851; served with distinction in the Civil War, attaining the rank of Major-General of volunteers; was a member of the New Jersey Senate in 1872–1881; United States Senator in 1881–1887, 1895–1901, and reëlected for the term 1901–1907. He was a commissioner of the World's Columbian Exposition at Chicago in 1893, and for several years commanded the 2nd brigade of the National Guard of New Jersey. At the outbreak of the Spanish-American War he was nominated one of the first Major-Generals of volunteers, but his colleagues believing he could be of more service in the Senate than in the field, he declined the appointment. Died in Camden, N. J., Dec. 27, 1901.

Sextant, an instrument for measuring the angular distance of objects by means of reflection. The principle of its construction depends on the theorem that if a ray of light suffer double reflection the angle between the original ray and its direction after the second reflection is double the angle made by the reflecting surfaces. The instrument of which this theorem is the principle is a brass sector of a circle in outline, the sector being the sixth part of a complete circle, for which reason the instrument is called a sextant.

Sexton, an under officer of the church, whose duty is to take care of the vessels, vestments, etc., belonging to the church, to attend on the officiating minister, and perform other duties pertaining to the church, to which is, in England, added the duty of digging and filling up graves in the churchyard.

Seychelles, a group of about 30 islands in the Indian Ocean. They were first occupied by the French, and were ceded to the British in 1814. The settlers are mostly of French extraction.

Seymour, George Franklin, an American clergyman; born in New York city, Jan. 5, 1829; was graduated at Columbia College in 1850 and at the General Theological Seminary in 1854; was ordained in the Protestant Episcopal Church in 1855; held various charges till 1865, when he was made Professor of Ecclesiastical History at the General Theological Seminary. He was also dean in 1875–1879. He was consecrated first Protestant Episcopal Bishop of Springfield in June, 1878.

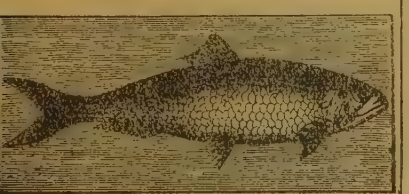
Seymour, Horatio, an American statesman; born in Pompey Hill, Onondago co., N. Y., May 31, 1810. In 1852 he was elected governor of New York on the Democratic ticket. At the outbreak of the Civil War he was decidedly in favor of the supremacy of the Constitution, and as governor a second time (1863–1865) showed conspicuous energy and ability in raising troops. His second incumbency of the governorship was marked by the draft riots in 1863. In 1868 he was defeated for the presidency by General Grant. He died in Utica, N. Y., Feb. 12, 1886.

Seymour, Thomas Day, an American educator; born in Hudson, O., April 1, 1848; was graduated at Western Reserve College in 1870; and was made Professor of Greek at Yale University in 1880.

Seymour, Thomas Hart, an American lawyer; born in Hartford, Conn., in 1808; was a member of Congress in 1843–1845; then refused a renomination; entered the army at the beginning of the Mexican War as major of the 9th Regiment of New England Volunteers. He was later made commander of the regiment and participated in the capture of Mexico

City. He was elected governor of Connecticut in 1850, 1851, 1852, and 1853; and was minister to Russia in 1853–1857. He died in Hartford, Conn., Sept. 3, 1868.

Shad, the popular name of three anadromous fishes of the genus Clupea: (1) The allice or European shad. (2) The American shad, an important



COMMON SHAD.

food fish, abundant on the Atlantic coast of America, and in some of the American rivers. It spawns in fresh water. Great quantities are salted. (3) The Twaite shad, common on the coasts of Europe, ascending rivers; abundant in the Nile. The flesh is coarser than that of the allice shad.

Shaddock, sometimes called pompelmoose, a large species of orange, attaining the diameter of seven or eight inches, with a white, thick, spongy, and bitter rind, and a red or white pulp of a sweet taste, mingled with acidity. It is a native of China and Japan, and was brought to the West Indies by a Captain Shaddock, from whom it derived its name.

Shadow. (1) Shade within defined limits; the figure of a body projected on the ground, etc., by the interception of light; obscurity or deprivation of light, apparent on a surface or plane, and representing the form of the body which intercepts the rays of light. (2) Darkness, gloom, shade, obscurity. (3) The dark part of a picture; the representation of comparative deficiency or deprivation of light; shade. (4) a reflected image, as in a mirror or water, hence, any image or portrait.

Shaffer, Newton Melman, an American physician; born in Kinderhook, N. Y., Feb. 14, 1846; was graduated at the Medical College of New York University in 1867; was assistant surgeon of the New York Orthopædic Dispensary and Hospital in 1871–1875, and surgeon-in-chief in 1876–1898. In the latter year he became Professor of Orthopædic Surgery at the Medical College of Cornell University. He designed numerous apparatus for deformities, particularly for hip, spine, and clubfeet.

Shaffner, Taliaferro Preston, an American inventor; born in Smithfield, Va., in 1818. He was an associate of Prof. S. F. B. Morse in the introduction of the telegraph; built the line from Louisville, Ky., to New Orleans, and that from St. Louis to Jefferson City in 1851; was a projector of a North Atlantic cable; the inventor of several methods of blasting; and held office in various telegraph companies. He engaged in the Dano-Prussian War in 1861; was a member of various scientific societies of Europe, and published several treatises on the telegraph. He died in Troy, N. Y., Dec. 11, 1881.

Shafter, William Rufus, an American military officer; born in Galesburg, Mich., Oct. 16, 1835; at the outbreak of the Civil War he entered the 7th Michigan Infantry as a 1st lieutenant, Aug. 22, 1861; became brevet Brigadier-General of volunteers for gallant and meritorious services during the war; and was mustered out of the volunteer service Nov. 2, 1865. He entered the regular army and became lieutenant-colonel of the 41st Infantry, Jan. 26, 1867; and Brigadier-General May 3, 1897. On the breaking out of the Spanish-American War he was given command of the army mobilized for the invasion of Cuba; his first decisive move was the landing of 16,000 men in Cuba in about 12 hours without an accident. After the war he commanded the Departments of California and Columbia in 1899–1901, and was retired June 30, 1901.

Shaftesbury, Anthony Ashley Cooper, 1st Earl of, an English statesman; born in Wimborne, St. Giles, Dorsetshire, England, July 22, 1621. After the deposition of Richard Cromwell he aided the restoration of

Charles II. with all his influence, and in 1661 was created Baron Ashley, and appointed chancellor of the exchequer and a lord of the treasury. In 1672 he was created Earl of Shaftesbury and lord high chancellor. His conduct on the bench was able and impartial, but he was deprived of office, probably through the influence of the Duke of York; and he at once became one of the most powerful leaders of the opposition. For his warmth in asserting that a prorogation of 15 months amounted to a dissolution of Parliament he was confined in the Tower from February, 1677, to February, 1678. After his liberation he took a prominent part in the attacks on Catholics during the popish-plot scare. In 1679 he became president of the council and the same year was instrumental in passing the Habeas Corpus Act. In 1681 he was indicted for high treason but acquitted. He entered into the plots of the Monmouth party and had to fly to Holland, where he died in Amsterdam, Jan. 21, 1683. He is the Achitophel of Dryden's famous satire.

Shaftesbury, Anthony Ashley Cooper, 3d Earl of, an English philosophical and moral writer, grandson of the preceding; born in Exeter House, London, England, Feb. 26, 1671. In 1708–1709 he published several works of a philosophical character, among others a "Letter on Enthusiasm" and an "Inquiry concerning Virtue or Merit." In 1710 his rapidly declining health led him to fix his residence at Naples. He died in Naples, Italy, Feb. 15, 1713.

Shaftesbury, Anthony Ashley Cooper, 7th Earl of, an English philanthropist, son of the 6th earl; born in London, England, April 28, 1801. He was educated at Oxford, and sat in the House of Commons from 1826 to 1851, when he succeeded to the peerage. He supported the administrations of Liverpool and Canning, and zealously labored to improve the condition of the laboring classes. He was president of the Bible Society, of the Pastoral Aid Society, of the Protestant Alliance, and of other religious organizations. He died in Folkestone, England, Oct. 1, 1885.

Shagreen, a species of leather, or rather parchment, prepared without tanning, from the skins of horses asses, and camels. It was formerly much used for cases for spectacles, instruments, watches, etc.

Shah, the title given by European writers to the sovereign of Persia in his own country he is known by the compound title Padishah. Also a chieftain or prince.

Shahan, Thomas Joseph, an American educator; born in Manchester, N. H., Sept. 11, 1857; was educated at the American College of Rome and at the Roman Seminary and was ordained in the Roman Catholic Church in 1882. He became Professor of Church History and Patrology at the Catholic University of America in 1891.

Shakers, a name given to an American sect of celibates of both sexes founded by Ann Lee, an English emigrant, about 1776, from their using a kind of dance in their religious exercises, but who call themselves the United Society of Believers in Christ's Second Appearing. Their chief settlement is at Mount Lebanon, N. Y. Their foundress was called the Elect Lady, and Mother of all the Elect and claimed to be the woman mentioned in Rev. xii. The Shakers profess to have passed through death and the resurrection into a state of grace — the resurrection order, in which the love which leads to marriage is not allowed, and are known as brothers and sisters. They abstain from wine and pork, live on the land and shun towns. They cultivate the virtues of sobriety, prudence, and meekness, take no oaths, deprecate law, avoid contention, and repudiate war. Their Church is based on these grand ideas: The kingdom of heaven has come Christ has actually appeared on earth the personal rule of God has been restored; the old law is abolished; the command to multiply has ceased; Adam's sin has been atoned; the intercourse of heaven and earth has been restored; the curse is taken away from labor; the earth, and all that is on it will be redeemed; angels and spirits have become, as of old, the familiars and ministers of men.

Shakespeare, William, an English dramatist and poet; born in Stratford-on-Avon, Warwickshire, En-

gland, in April, 1564. His birthplace, as pointed out by traditions, is the house in Henley street, Stratford, which belonged to his father. In his 19th year he married Anne Hathaway, daughter of a yeoman at the neighboring hamlet of Shottery, and eight years older than himself.

He went to London about 1586, and lived there many years, leaving his wife and children at Stratford; he gained an honorable position as actor, playwriter, and shareholder in the theater of Blackfriars, and afterward in that of the Globe; enjoyed the favor and patronage of Queen Elizabeth, James I., and the Earl of Southampton, the warm friendship of Ben Jonson, and the highest respect and admiration of his associates, not only for his preëminence as a poet, but for his honesty, geniality, and worth as a man.

Of his end we have no other account than the short statement in the diary of the Rev. John Ward, vicar of Stratford that "Shakespeare, Drayton, and Ben Jonson had a merry meeting, and it seems drank too hard, for Shakespeare died of a fever then contracted." The date of his death is April 23, 1616.

The first collected edition of Shakespeare's plays was the folio of 1623. His poems of "Venus and Adonis," and "The Rape of Lucrece," were published in 1593 and 1594, and were the only works which appeared with his name in his lifetime. Of the 36 plays (exclusive of "Pericles"), the dates of publication of only a few are known. "The Two Gentlemen of Verona," and "Love's Labors Lost," were among the earliest; and "Tempest," "Troilus and Cressida," "Henry VIII.," "Coriolanus," "Julius Cæsar," and "Antony and Cleopatra" among the latest. The "Midsummer Night's Dream," "Merchant of Venice," "Romeo and Juliet," "Richard II.," "Richard III.," "Henry IV.," and "King John" were all produced before 1598. A copy of "Hamlet" is extant, bearing the date 1602. "Twelfth Night" was produced in 1601; "King Lear" was printed in 1607; the "Tempest" was written in 1611. The second folio edition of the collected plays appeared in 1632, and two others subsequently. It is said that by 1830 not less than 82 editions had been published, without including separate plays, and poems, and commentaries. Since then the number has been enormously increased.

Shale, a cod or pod; a shell; a husk; as the shale of a bean. In geology, an indurated clay, which often forms beds in the coal measures. It is chiefly composed of silica and alumina, in variable proportions, but also frequently contains a considerable amount of carbonate of lime and oxide of iron. It is of a gray or grayish-black color, or brownish-red when containing much iron. Its structure is more or less slaty. It is soft, and easily reduced to powder. It is used for making slate pencils.

Shaler, Nathaniel Southgate, an American geologist; born near Newport, Ky., Feb. 20, 1841. He served two years as an artillery officer in the Union army during the Civil War; was Professor of Geology; dean of Lawrence Scientific School; and after 1884 geologist in charge of Atlantic Division United States Geological Survey.

Shamrock, a ternate-leaved plant, adopted by the Irish as their national emblem.

Shanghai, a city and seaport of China, in the province of Kiangsu; near the junction of the Hwang-pu and the Wu-sung rivers. The Chinese city proper is inclosed within walls 24 feet high, the streets being narrow and dirty, and the buildings low, crowded, and for the most part unimportant. In 1843 Shanghai was opened as one of the five treaty ports, and an important foreign settlement is now established (with a separate government) outside the city walls. Shanghai has water communication with about a third of China, and its trade since the opening of the port has become very extensive, in 1897 the imports amounting to about $92,553,430, the exports to $54,876,407. The chief imports are cottons, yarns, woolens, and opium; and the exports, silk, tea, rice, and raw cotton. The largest part of the foreign trade is in the hands of British and American merchants. Pop. 457,000.

Shanks, William Franklin Gore, an American journalist; born

in Shelbyville, Ky., April 20, 1837. He was war correspondent for the New York "Herald" (1861–1865); subsequently editorially connected with the same paper, with "Harper's Weekly," the New York "Times," "Tribune," and "Daily Star"; in 1880 organized the National Press Intelligence Company; in 1891 established "The Daily and Weekly Bond Buyer," which he owned and edited. During the Civil War he served as volunteer aide-de-camp on the staffs of Generals Rousseau and Thomas, and was wounded at the battle of Chickamauga. He was imprisoned for refusing to divulge the name of a writer of an article in the New York "Tribune."

Shark, an English popular name for any individual of the group Selachoidei. Sharks are scaleless, and the skin usually rough. They are numerous in tropical seas, becoming scarcer as they recede from the warmer regions, a few only reaching the Arctic circle. They are rapid swimmers, with great power of endurance; the larger sharks are exclusively carnivorous, and some of them extremely dangerous to man. They scent their food from a distance, and are readily attracted by the smell of blood or decomposing bodies. The flesh of sharks is coarse, but it is sometimes eaten — the Chinese use sharks' fins for making thick gelatinous soups, and the liver yields an oil, for the sake of which a shark fishery is prosecuted on the coast of Ceylon. Their rough skin is employed by joiners to polish fine-grained wood, and by cutlers to cover the hilts of swords to make them firmer in the grasp. Figuratively, a greedy, artful fellow; one who fills his pocket by sly tricks.

EGG OF SHARK. (SCYLLIUM CHILENSE.)

Sharp, Granville, an English abolitionist; son of the archdeacon of Northumberland; born in Durham, England, in 1734. He went to London, and, after studying law, obtained a post in the Ordnance office; but this he resigned in 1777 on the outbreak of the war with America, of which he disapproved. He was the author of upward of 61 publications — mainly, pamphlets — on philological, legal, political, and theological subjects; but his principal writings and the main labors of his life were in defense of the negro, and for the abolition of the slave trade and slavery. He was with Clarkson, one of the founders of the Association for the Abolition of Negro Slavery, and assisted in the establishment of the colony of Sierra Leone for freedmen. He died in London, July 6, 1813.

Sharpless, James, an American artist; born in England about 1751; came to the United States in 1794 and began the making of pastel portraits. Among his sitters were Washington, Jefferson, Monroe, Burr, Hamilton and other prominent Americans. These portraits, about 40 in all, were placed in the National Museum in Independence Hall, Philadelphia, in 1876. He died in New York city, Feb. 26, 1811.

Sharswood, George, an American jurist; born in Philadelphia, Pa., July 7, 1810; was graduated at the University of Pennsylvania in 1828 and admitted to the bar in 1831. In 1867 of the latter year he became a justice of the Pennsylvania Supreme Court; and was chief justice in 1878–1882. He died in Philadelphia, Pa., May 28, 1883.

Shasta, Mount, a peak of volcanic origin in Siskiyou co., Cal., at the N. end of the Sierra Nevada, 14,350 feet above sea-level. On its summit are three glaciers, one of which, the Whitney glacier, is 3 miles long. On its slopes are some gigantic trees over 300

feet high. The mountain is almost a perfect cone, and is a dormant volcano.

Shattuck, Harriette Robinson, an American parliamentarian; born in Lowell, Mass., Dec. 4, 1850; received a public school education. She was for several years assistant clerk and in 1872 clerk of the Massachusetts House of Representatives, and was the only woman that ever held that post. Later she became a teacher of parliamentary law. Her publications include "Shattuck's Advanced Rules of Parliamentary Law" (1895).

Shaw, Albert, an American editor; born in Shandon, Butler co., O., July 23, 1857; was educated at Iowa College and Johns Hopkins University. After 1891 he was the editor of the American "Review of Reviews." "Municipal Government in Great Britain" and "Municipal Government in Continental Europe" are his principal works.

Shaw, Henry Wheeler, an American humorist; born in Lanesborough Mass., April 21, 1818. In 1859 he began to write and in 1860 sent "An Essa on the Mull, bi Josh Billings" to a New York paper. It was reprinted in several comic journals, and extensively copied. His most successful literary venture, however, was a travesty on the "Old Farmer's Almanac," 127,000 copies of which were sold in its second year. He began to lecture in 1863, and for 20 years previous to his death contributed regularly to the New York "World." He died in Monterey, Cal., Oct. 14, 1885.

Shaw, John, an American naval officer; born in Mount Mellick, Ireland, in 1773; removed to Philadelphia, Pa., in 1790. When war with France became probable, he joined the the United States navy as a lieutenant; and was placed in command of the schooner "Enterprise" in December, 1799. During an eight months' cruise with this vessel he engaged in five severe actions, recaptured 11 American prizes and took 5 French privateers. He was promoted captain in August, 1807, and commanded the fleet which was blockaded by the British in the Thames river in 1814. He died in Philadelphia, Pa., Sept. 17, 1823.

Shaw, John Balcom, an American clergyman; born in Bellport, N. Y., May 12, 1860; was graduated at Lafayette College in 1885, and at the Union Theological Seminary in 1888; was ordained in the Presbyterian Church and became pastor in New York.

Shaw, Lemuel, an American jurist; born in Barnstable, Mass., Jan. 9, 1781; was graduated at Harvard University in 1800 and was admitted to the bar in 1804; became chief-justice of the Massachusetts Supreme Court in 1830–1860. He died in Boston, Mass., March 30, 1861.

Shaw, Leslie Mortier, an American statesman; born in Morristown, Vt., Nov. 2, 1848; was graduated at Cornell College, Mt. Vernon, Ia., in 1874, and at the Iowa College of Law in 1876, and in the latter year began the practice of law in Denison, Ia. Some years later he became interested in banking and was made president of the Bank of Denison and also of the Bank of Manila, Ia. He first became prominent in politics in 1896, where he came out strongly for William McKinley, and soon acquired a high reputation as a public speaker. He was elected governor of Iowa for the terms of 1898–1900 and 1900–1902; and was chairman of the International Monetary Conference in Indianapolis, Ind., in 1898. He resigned the office of governor in 1902 to succeed Lyman J. Gage as Secretary of the United States Treasury Department.

Shaw University, a coeducational institution in Raleigh, N. C., for colored students; founded in 1865 under the auspices of the Baptist Church.

Shawl, an article of dress worn by both sexes in the East, but in the West chiefly by females. Some of the Eastern shawls are beautiful and costly fabrics. Norwich and Paisley were long famed for their shawls made in imitation of those from India. The use of shawls in America belongs almost entirely to the present century.

Shawnee Indians, a tribe of American Indians of the Algonquin family, formerly settled mainly in New York, Pennsylvania, and Ohio, but driven W. by the Iroquois. They helped the French against the English, gave trouble to the newly-founded

United States, and in 1812 some bands joined the English. They afterward removed to Missouri, Kansas, and Indian Territory.

Shays, Daniel, an American insurgent; born in Hopkinton, Mass., in 1747; served as ensign at the battle of Bunker Hill, and attained the rank of captain in the Continental army. He took a leading part in the popular movement in Western Massachusetts for the redress of alleged grievances, appearing before Springfield, Mass., at the head of 1,000 men to prevent the session of the Supreme Court at that place, and commanding the rebel party at Pellham and at the engagement with the militia at Petersham. After the rebellion was put down, however, he was pardoned by the government and later, in his old age, was allowed a pension for his services during the Revolutionary War. He died in Sparta, N. Y., Sept. 29, 1825.

Shea, John Dawson Gilmary, an American historian; born in New York city, July 22, 1824; was educated at Columbia College; studied law and was admitted to the bar, but devoted himself chiefly to literature. He edited the "Historical Magazine" in 1859–1865; was one of the founders and first president of the United States Catholic Historical Society; a member of numerous historical societies in Canada and the United States; and corresponding member of the Royal Academy of History, Madrid, Spain. Died in Elizabeth, N. J., Feb. 22, 1892.

Sheartails, a genus of hummingbirds of which the slender sheartail and Cora's sheartail are two familiar species. These birds occur, the former in Central America generally; the latter in Peru and in the Andes valleys. They derive their name from the elongation of the two central tail feathers of the males.

Shearwater, the name of several marine birds of the genus Puffinus. The great shearwater, which is 18 inches long, is found on the S. W. coasts of England and Wales. They fly rapidly, skimming over the sea, from which they pick up small fishes, mollusks, etc. The name is sometimes applied to the scissor-bill or skimmer.

Sheatfish, a name applied to any fish of the family Siluridæ, but specifically to the sly silurus, with the exception of the sturgeon, the largest European fresh-water fish, and the only European member of the family. It is allied to the catfish. It occurs in the Rhine, and is common in Germany, Poland, Styria, the Danube, and the rivers of Southern Russia. It attains a weight of from 300 to 400 pounds.

Sheave, the grooved wheel in the shell of a block or pulley over which the rope runs. In wooden blocks, it is generally of lignum vitæ, and has a brass bushing, called a coak, which runs on the pin. In locksmithing, a sliding scutcheon for covering a keyhole.

Sheba, in ancient geography, a kingdom of South Arabia, embracing the greater part of Arabia Felix. The Queen of Sheba visited Solomon, 990 B. C.

Shedd, Mrs. Julia Ann (Clark), an American art writer; born in Newport, Me., Aug. 8, 1834. Besides many contributions to art periodicals, she published: "Famous Painters and Paintings," etc.

Shedd, William Greenough Thayer, an American theologian; born in Acton, Mass., June 21, 1820; was graduated at the University of Vermont in 1839, and at Auburn Theological Seminary in 1843. He became Professor of English Literature in the University of Vermont in 1845, which chair he held till appointed to that of Sacred Rhetoric in Auburn Theological Seminary in 1852. Subsequently he was Professor of Church History in Andover Theological Seminary; associate pastor of the Brick Church, New York city; and Professor of Biblical Literature and Theology in the Union Theological Seminary. He died in New York city, Nov. 17, 1894.

Sheep, the common name of the genus Ovis, belonging to the hollow-horned ruminant family. Naturalists are by no means agreed as to what was the original breed of this invaluable animal, which is in modern farming almost equally important for furnishing the farm with a dressing of manure, and the community at large with mutton, clothing and other necessaries of life. The leading fact in the geographical history of this genus is that

it occurs both in the New and the Old World, whereas the goat tribe are naturally unknown in America. It is usually regarded by naturalists as being not only specifically, but generically, distinguished from the goat tribe; but some authorities, on the other hand, are inclined to believe that the generic separation is founded chiefly on characters which have arisen from the influential power of man. In a state of nature, the sheep is scarcely less active or energetic than the goat; its dimensions are greater, its muscular strength at least equal both in force and duration. It is also an Alpine animal, and among its native fastnesses bounds from rock to rock with almost inconceivable swiftness and agility.

The four unsubdued races of sheep are as follows: The Musmon, the bearded sheep of Africa; the Argali, or wild sheep of Asia; and the Rocky Mountain sheep of the United States. The latter is larger than the largest varieties of domestic breeds. The horns of the male are of great dimensions, arising a short way above the eyes, and occupying almost the entire space between the ears, but without touching each other at their bases. The hair in this species resembles that of a deer, and is short, dry, and fixible in its autumn growth; but becomes coarse, dry and brittle as the winter advances.

The most important breed of sheep as regards the texture of the wool is the Merino, in modern times brought to the greatest perfection in Spain, though their originals probably formed the flocks of the patriarchs thousands of years ago, and have been the stock of all the fine-wooled sheep. They readily form cross breeds, called demi-merinos, which have been brought to great perfection in France, whence, as well as from Spain, they have been imported into the United States. The total number of sheep in the United States on Jan. 1, 1900, was 41,883,065; average price per head, $2.93; total value, $122,665,913.

Black sheep is a figurative term to denote a person who is, as it were, outlawed from society, by reason of his misdeeds or moral obliquities.

Sheep's-Head, the name of a fish caught on the shores of Connecticut and Long Island. It is allied to the gilt-head and the bream, and is considered a delicious food. It receives its name from the resemblance of its head to that of a sheep.

Sheep Tick, a well-known dipterous insect, belonging to the family horse flies. The pupæ produced from the eggs are shining oval bodies which become attached to the wool of the sheep. From these issue the tick, which is horny, bristly, of a rusty ochre color, and wingless. It fixes its head in the skin of the sheep and extracts the blood, leaving a large round tumor. Called also sheep louse.

Sheers, or Shears, in nautical language, an apparatus consisting of two masts or legs, secured together at the top, and provided with ropes or chains and pulleys; used principally for masting or dismantling ships, hoisting in and taking out boilers, etc. The legs are separated at their feet to form an extended base and are lashed together at their upper ends, to which the guy ropes and tackle are attached.

Sheet, in ordinary language, a large, broad, and thin piece of anything, as paper, linen, glass, iron, etc.; specifically, (1) A broad and large piece of cloth, as of linen or cotton, used as part of the furniture of a bed. (2) A broad piece of paper, either unfolded as it comes from the manufacturer, or folded into pages. Sheets of paper are of various sizes; as royal, demy, foolscap, etc. (3) A sail. Also anything expanded; a broad expanse or surface.

Sheffield, a municipal and parliamentary borough of England, county of York (West Riding); on hilly ground at the junction of the Sheaf and Don, about 160 miles N. of London. In the central parts great improvements have recently been made in the crowded streets by the corporation, and the suburban districts are well built and picturesquely situated. The trade of Sheffield is chiefly connected with cutlery, for which it has long been famous, and the manufacture of all forms of steel, iron, and brass work. The steel manufacture includes armor plating, rails, engine castings, rifles, etc. There are also manufactures of engines, machinery, plated goods, Britannia-metal goods, optical

instruments, stoves and grates, etc. Pop. (1901) 380,717.

Sheik, or **Sheikh** (Arabian, an elder, a chief), the head of a Bedouin family of importance with its retainers, or of a clan or tribe. He is sovereign within the portion of the desert occupied or traversed by his people, but, if too despotic, can be kept within bounds by the knowledge that a portion of his clan may transfer its allegiance to some other sheik. When war exists, the sheiks of a region confederate together and choose one of their number as a sheik or chief.

Shekel, in Hebrew weights, the fundamental weight in the Hebrew scale. It is believed to have weighed 8.78 drachms avoirdupois, 10 pennyweights troy. Three hundred shekels constituted a talent. In Hebrew money, a coin believed to have been worth 54.74 cents, but money was then, perhaps, 10 times as valuable as now. Shekels of the Maccabee period still exist.

Shelby, Isaac, an American military officer; born in North Mountain, Md., Dec. 11, 1750. In 1774 he was made a lieutenant in a company commanded by his father. He was present at the action of Point Pleasant, where his skill won the day, and he commanded the fort there till July, 1775. Later Shelby was appointed commissary-general of the Virginia troops with the rank of captain; was made colonel in 1779; and in the following year with John Sevier planned the expedition which brought about the action of King's Mountain and changed the whole aspect of the Revolutionary War. In 1792, when Kentucky became a State he was chosen its first governor by an overwhelming majority. He refused to be a candidate for a second term, but settled down to farm life which he declined to leave for public office. When the War of 1812 broke out and Michigan fell into the hands of the enemy, though 63 years old, he recruited and led 4,000 men to reënforce Gen. William H. Harrison. In recognition of this service Congress voted him a gold medal and he received the thanks of both that body and the Legislature of Kentucky. He died near Stanford, Ky., July 18, 1826.

Sheldon, Charles Monroe, an American clergyman; born in Wellsville, N. Y., Feb. 26, 1857; was graduated at Brown University in 1883 and at Andover Theological Seminary in 1886; was ordained in the Congregational Church the same year, and became pastor of the Central Congregational Church, Topeka, Kan., in 1899. He edited the Topeka "Capital" for one week in 1900, as a distinctly Christian newspaper, and was the author of numerous books, including "His Brother's Keeper," "In His Steps," "Malcolm Kirk," "Edward Blake," "Born to Save," etc.

Sheldon, Grace Carew, an American journalist; born in Buffalo, N. Y.; was graduated at Wells College in 1875. She founded and became the head of the Woman's Exchange of Buffalo in May, 1886. This exchange receives work only from self-supporting women in the United States. In September, 1895, she went to the International Press Congress held in Bordeaux as the first American woman delegate. Later she traveled in Northern Venezuela, Orinoco, Curacao, Haiti, and the West Indies, for the purpose of contributing special articles to New York and Buffalo papers.

Sheldon, Lionel Allen, an American military officer; born in Otsego co., N. Y., Aug. 30, 1829. In 1860 he was commissioned a Brigadier-General of militia, and in that capacity raised many recruits for the Union army. He was made colonel of the 42d Ohio Infantry in 1862; won distinction in the battles of Chickasaw Bayou and Arkansas Post; was wounded in the action at Fort Gibson; and took part in the capture of Vicksburg. He was brevetted Brigadier-General of volunteers in 1865. After the war he removed to New Orleans, where he practised law; was a Republican member of Congress in 1869–1875; and governor of New Mexico in 1881–1885.

Shell, in zoölogy, the hard calcareous substance which either protects the testaceous mollusca externally, or supports certain species of them internally. Shells are divided into Multivalves, Bivalves, and Univalves. The first order, Multivalve, is made up of shells consisting of more

shelly parts or pieces than two. Every part of a shell which is connected with a corresponding part by a cartilage, ligament, hinge, or tooth, is called a valve of such shell. The second order, Bivalve, is made up of shells having two parts or valves, generally connected by cartilage or hinge; as in the cockle and mussel. The third order, Univalve, is made up of shells complete in one piece — as in the periwinkle and the whelk — and they are subdivided into shells with a regular spire, and those without a spire. The shells composing this order are far more numerous than those of the two preceding, both in genera and species. Shells increase in size by the deposition of new layers internally on those already formed. Each new layer extends more or less beyond the margin of the layer to which it is applied, so that as the animal becomes older its shell becomes larger and thicker. The outer surface is generally covered by a thin layer of membraneous or horny matter, named the epidermis, and the inner surface is often covered with a layer of a pearly nature. It is universally found that the marine shells of warm climates exceed all others in beauty of coloring and in taking a fine polish.

In military usage the name shell is given to a hollow vessel of metal containing gunpowder, or other explosive compound, so arranged that it shall explode at a certain point and spread destruction around by the forcible dispersion of its fragments. The term shell is given to an engraved copper cylinder employed in print works.

Shelley, Percy Bysshe, an English poet, son of Sir Timothy Shelley; born in Horsham, England, Aug. 4, 1792; was educated at Sion House, School, Brentford, at Eton, and at University College, Oxford. At Oxford he published anonymously, a scholastic thesis entitled "A Defense of Atheism." The authorship being known he was challenged, and refusing either to acknowledge or deny it, was at once expelled. After leaving the university, he completed his poem of "Queen Mab," begun some time previously, and privately printed in 1813. His first great poem, "Alastor, or the Spirit of Solitude," (1816), was followed in 1817 by the "Revolt of Islam," a poem in the Spenserian stanza. In September, 1811, six months after his expulsion, he eloped to Edinburgh with Harriet Westbrook, the daughter of a retired innkeeper. She was 16 years of age, his own age being 19. The marriage turned out unhappily, and after nearly three years of a wandering unsettled life Mrs. Shelley returned with two children to her father's house. In November, 1816, she committed suicide by drowning. Shelley was deeply affected by this event, but soon after married Mary Godwin, with whom he had visited the Continent in 1814, and by whom he already had a child. By a suit in Chancery decided in 1817, Mr. Westbrook obtained the guardianship of the children, on the plea that his atheistical opinions and irregular views on marriage made the father unfit to be instrusted with them. Partly from his lungs being affected, and partly from anxiety lest he should be deprived of the children of his second marriage, Shelley left England in March, 1818, and the whole short remainder of his life was passed in Italy. After staying for some time with Lord Byron at Venice he proceeded to Naples; after Naples he visited Rome; and from Rome he went to Florence and Leghorn, and finally settled at Pisa. On July 8, 1821, he was sailing with a Mr. Williams in the Bay of Spezia when both were drowned by, as was long believed, the upsetting of the boat through a sudden squall; but there is some suspicion that the boat was purposely run down by an Italian felucca for the sake of plunder.

Shenandoah, a river of the United States, which flows N. E. through the valley of Virginia, and immediately below Harper's Ferry joins the Potomac, of which it is the principal tributary. Its length is 170 miles, the greater part of which is navigable for boats. The valley of the Shenandoah was the scene of numerous military operations in the American Civil War, and was devastated by General Sheridan in 1864.

Shenandoah, The, a ship in the Confederate service during the American Civil War. It was built at Glasgow in 1863 for the China trade, and in 1864 was purchased by the Con-

federates. Her war record included the capture of 38 Federal vessels. Her career was continued for several months after Lee's surrender, and included the last hostile acts of the Civil War. When Commander Waddell learned of the close of the war, he sailed to Liverpool and surrendered to the British government. The commander and crew were liberated and the ship was handed over to the United States consul. The "Shenandoah" was the only vessel that carried the Confederate flag around the world.

Sheol, in Jewish belief, the place of the dead, from a Hebrew word meaning a cave. In the Authorized Version of the Bible it is translated by the words, hell, grave, or pit. In the Revised Version the word "sheol" is generally left untranslated in the text, while "grave" is put in the margin.

Shepard, Charles Upham, an American mineralogist; born in Little Compton, R. I., June 29, 1804; was graduated at Amherst College in 1824. In 1835 he discovered a new species of microlite; in 1838 that of warwickite; and in 1839 that of danburite. During his residence in Charleston, S. C., he discovered valuable deposits of phosphate of lime near that city, which proved very useful in the manufacture of fertilizers and added greatly to the chemical industries of the State. He died in Charleston, S. C., May 1, 1886.

Shepherd Kings, the chiefs of a nomadic tribe of Arabs, who established themselves in Lower Egypt some 2,000 years B. C. Manetho says they reigned 511 years, Eratosthenes says 470 years, Africanus, 284 years, Eusebius, 103 years. Some say they extended over five dynasties, some over three, some limit their sway to one; some give the name of only one monarch, some of four, and others of six. Bunsen places them 1639 B. C.; Lepsius, 1842 B. C.; others, 1900 or 2000.

Shepherd's Dog, a popular name for many varieties of Canis familaris, used to tend and drive sheep. The shepherd's dog has a longish head, with a sharp muzzle, and good breadth over the forehead; his ears are slightly raised, and his coat is short and woolly; tail usually long and bushy.

Shepherd's Purse, a plant. It is an annual weed, found in all temperate climates, having simple or cut leaves and small white flowers. It is found everywhere, in fields, pastures and roadsides.

Sheppey, an island of England, in the county of Kent, at the mouth of the Thames, between the estuaries of the Medway and the Swale. It is 9 miles long and 5 broad, is rich and fertile, and contains the town of Sheerness.

Sherbet, a beverage. In the United States the word indicates a kind of water ice.

Sherbrooke, Robert Lowe, Viscount, an English statesman; born in Bingham, England, Dec. 4, 1811. He obtained in Mr. Gladstone's ministry the office of Chancellor of the Exchequer; exchanging it in 1873 for that of Home Secretary. In 1880 he went to the Upper House as Viscount Sherbrooke. He died in London, England, July 27, 1892.

Sheridan, Mount, a mountain of Wyoming, situated in the Yellowstone National Park; is a summit of the Red Range of the Rocky Mountains. It is 10,420 feet high, with a range of vision over an immense expanse and several hundred distinct mountain summits, at distances varying from 30 to 200 miles. A large part of it is formed of porphyry of a purplish-pink color; and was named for Gen. Philip H. Sheridan.

Sheridan, Phillip Henry, an American military officer; born in Albany, N. Y., March 6, 1831; was graduated at the Military Academy at West Point in 1853. On the breaking out of the Civil War he was appointed quartermaster of the army in Southwestern Missouri; in 1862 became chief quartermaster of the Western Department, and colonel of the 2d Michigan Volunteer Cavalry. He cut the railroads S. of Corinth; defeated two separate forces of cavalry at Baldwin and Guntown in June, 1862, and fought at Booneville; was promoted Brigadier-General of volunteers; took command of the 11th Division of the Army of Ohio; distinguished himself at Perryville and at Stone river or Murfreesboro, Dec. 31 and Jan. 3, 1863, for which he was

promoted Major-General of volunteers. He was engaged at Chickamauga, Sept. 19 and 20, 1863, and in the operations around Chattanooga; was appointed, in April, 1864, to the command of the cavalry corps of the Army of the Potomac; took part in the battles of the Wilderness, Meadow Bridge, and Cold Harbor, in May; in June, led a cavalry expedition into the heart of the Confederate country and was given the command of the Army of the Shenandoah; defeated General Early in several engagements in the Shenandoah valley. On Oct. 19 occurred his famous ride from Winchester. Under orders from Grant he devastated the valley. He was appointed to the chief command of the cavalry, which branch of the Federal forces, under his able and energetic direction, acquired an efficiency and gained a reputation such as it had never borne before. Sheridan was promoted Brigadier-General, U. S. A., Sept. 20, 1864, and Major-General, Nov. 8 of the same year. On Feb. 9, 1865, the thanks of Congress were tendered to him for "the gallantry, military skill, and courage displayed in the brilliant series of victories achieved by his army in the valley of the Shenandoah, especially at Cedar Creek." After the capture of Staunton, he pressed on to Columbia, laying waste the country in every direction; gained the battle of Five Forks, April 1, 1865; assisted in compelling the Confederate forces to evacuate Petersburg and Richmond, and near Appomattox Court-house encountered General Lee, who surrendered April 9. On March 4, 1869, he was promoted Lieutenant-General, and Nov. 1, 1883, succeeded Sherman in command of the army. Congress revived the grade of general, to which he was appointed, June 1, 1888. He died in Nonquitt, Mass., Aug. 5, 1888.

Sheriff, the chief officer of a shire or a county, to whom is intrusted the execution of the laws, the serving of judicial writs and processes, and the preservation of the peace. In the United States the sheriff is either elected by the Legislature or the citizens, or appointed and commissioned by the executive of the State. The office is almost exclusively ministerial. The sheriff in person or by deputy executes civil and criminal process throughout the county, has charge of the jail and prisoners, attends courts, and keeps the peace. His judicial authority is generally confined to ascertaining damages or writs of inquiry, etc.

Sherman, Frank Dempster, an American poet; born in Peekskill, N. Y., May 6, 1860. Educated at Columbia College and Harvard University, he became adjunct professor in the Columbia School of Architecture. His poems are a frequent feature of the magazines.

Sherman, John, an American statesman; born in Lancaster, O., May 10, 1823; brother of Gen. William T. Sherman; was admitted to the bar in 1844; served as a delegate to the National Whig conventions of 1848 and 1852; and was a member of Congress in 1855–1861. He took a prominent part in the proceedings of the House; was on the Committee of Inquiry sent to Kansas; and joined the movement for the formation of the Republican party. In 1861–1877 he was in the Senate and there was prominently identified with the support of all measures for the prosecution of the Civil War; defended the protective tariff, the restoration of specie payments, and the refunding of the National debt. He was Secretary of the Treasury in 1877–1881, and superintended the resumption of specie payments in 1879, after a suspension of 17 years. He was reëlected to the Senate in 1881 and continued to hold that office till 1897, when he was appointed Secretary of State by President McKinley. He resigned that office, however, in 1898, on account of failing health. He was a candidate for the presidential nomination in 1884 and 1888. Among his publications are: "Recollections of Forty Years in the House, Senate, and Cabinet." He died in Washington, D. C., Oct. 22, 1900.

Sherman, Roger, an American statesman; born in Newton, Mass., April 19, 1721. He was admitted to the bar in 1754. He was a member of the Continental and National Congress in 1774–1791; one of the committee to draft the Declaration of Independence, of which he was a

signer; and in 1787, in conjunction with Dr. Samuel Johnson and Oliver Ellsworth, served as a delegate to the convention charged with the duty of framing the Federal Constitution. Died in New Haven, Conn., July 23, 1793.

Sherman, Thomas West, an American military officer; born in Newport, R. I., March 26, 1813; was graduated at the United States Military Academy in 1836. He served in the Florida and Mexican Wars, and for his services in the latter was brevetted major, Feb. 23, 1847. At the outbreak of the Civil War he was placed in command of a battery of United States artillery, and later was made chief of light artillery in the defense of Washington, D. C. While leading a column in the assault on Port Hudson, La., on May 27, 1863, he lost his right leg, in consequence of which he was on leave of absence till February, 1864. On his return to duty he was placed in command of a reserve brigade of artillery in the Department of the Gulf, and later took charge of the defenses of New Orleans and the Southern and Eastern Districts of Louisiana. On March 13, 1865, he was brevetted Major-General of volunteers and Major-General, U. S. A., for gallant services during the war. He was retired as full Major-General, U. S. A., on Dec. 31, 1870; and died in Newport, R. I., March 16, 1879.

Sherman, William Tecumseh, an American military officer; born in Lancaster, O., Feb. 8, 1820; was graduated from the United States Military Academy in 1840; entered the army, and was promoted to 1st lieutenant in 1841. He acted as assistant adjutant-general in 1847, and obtained a brevet of captain, May, 1848, for meritorious services in California during the war with Mexico. After the fall of Fort Sumter he was commissioned colonel of the 13th United States Infantry, and commanded the 3d Brigade at the battle of Bull Run, July 21, 1861. On the reorganization of the National army he was made Brigadier-General of volunteers, accompanied General Anderson to Kentucky, succeeded him temporarily in command till at his own request he was relieved by General Buell and was ordered to Missouri. In the early part of 1862 he was appointed to the command of a division under General Grant, and acted with great bravery at the battle of Shiloh, April 6; was promoted to Major-General, May 1; and when the Department of Tennessee was formed, in December, was made commander of the 15th Army Corps. He commanded the wing of the army that captured Fort Hindman, Ark., Jan. 10, 1863, after which he resumed command of the 15th Army Corps; took part in the siege of Vicksburg, which capitulated July 3, 1863; and led the expedition which captured Jackson city, July 10.

When General Grant was placed in command of the army previously under General Rosecrans, he gave the command of the Department of the Tennessee to General Sherman, who encountered General Longstreet, and obliged him to retreat, Nov. 20; and in February, 1864, made his expedition to Meridian, Miss., and broke up that important railroad center, driving General Polk's army out of Mississippi. Having been charged with the command of the army in Georgia, May 4, he commenced the expedition through that State which ended in the capture of Atlanta, the capital city. General Hood thrice attacked the Federal army and was repulsed, sustaining considerable loss. After his third failure General Hood acted merely on the defensive at Atlanta, which fell into the hands of the Nationals in the beginning of September. In October Hood began his movement toward Tennessee. Sherman followed him as far as Resaca, 75 miles, drove him from the railroad, and then sent part of his army to Tennessee to defend that State, and with the balance began his "march to the sea," to act in concert with the Union army in Virginia against Lee. The distance from Atlanta to Savannah is 290 miles. General Sherman accomplished the march with very little loss in 23 days; and Savannah fell into his hands Dec. 21, 1864. General Sherman defeated the Confederates at Bentonville, N. C., March 19, 1865, and soon afterward paid a visit to General Grant, to concert those measures for the defeat of General Lee which ended in the submission of that general and that of Gen. J. E. Johnston who sur-

rendered his army to General Sherman, April 26, 1865, which was one of the closing actions of the war. General Sherman was promoted to the rank of Lieutenant-General, July 25, 1866; succeeded General Grant as General, March 4, 1869; was retired Feb. 8, 1884, and died in New York city, Feb. 14, 1891. A magnificent equestrian statue of General Sherman has been erected at the S. E. entrance of Central Park, New York, and on the very spot in Washington from which he watched, in 1865, the grand march of the Union army returned from the war, another splendid equestrian statue of the general was unveiled on Oct. 15, 1903.

Sherman Act, an act of the United States Congress, approved July 14, 1890. It instructed the Secretary of the Treasury to buy silver bullion to the amount of 4,500,000 ounces a month, and to issue Treasury notes in payment. The business depression of the summer of 1893 was believed to be a consequence of the bill, and President Cleveland summoned Congress to convene in special session, Aug. 7. A bill to repeal the silver-purchasing proviso of the Sherman Act passed the House Aug. 28. In the Senate, the Voorhees bill was presented as a substitute, its provisions being a repeal of the silver-purchasing clause, but affirming bimetallism as a National policy. After a protracted contest the Voorhees bill passed the Senate, Oct. 30. It was concurred in by the House Nov. 1, and the President approved it the same day.

Sherry, a favorite Spanish wine, prepared from small white grapes grown in the province of Andulusia, those which furnish the better qualities being cultivated in the vineyards of Xeres.

Sherwood, Sidney, an American educator; born in Saratoga co., N. Y., May 28, 1860; was graduated at Princeton College in 1879 and later studied at the Columbia Law School. He took a three years' course at Johns Hopkins University in history, economics, and politics; and in 1892 was made associate Professor of Political Economy there. He was the author of "History and Theory of Money"; and numerous essays. Died 1901.

Shetland, or **Zetland Islands** a group of about 90 islands (of which 30 are inhabited) lying N. N. E. of the Orkney Islands; together with which they form a county; area, 325 square miles; pop. about 30,000. The climate is humid and mild, but severe storms rage during winter. It seems peculiarly healthy for the natives, who frequently attain a great age, and enjoy unusual freedom from pulmonary diseases. In the latitude of Shetland in midsummer daylight continues throughout the whole 24 hours, while in midwinter the sun is only above the horizon for 5¼ hours.

The chief occupation of the Shetlanders is fishing. The group produces peculiar diminutive breeds of horses, cattle, and sheep. The ponies, called "shelties," are remarkably sure-footed.

Shetland Pony, a very small variety of the horse, with flowing manes and tails, peculiar to Shetland. They are very strong, and capable of enduring great fatigue, but do not average more than eight hands in height.

Shibboleth, the test word used by the Gileadites under Jephthah after their victory over the Ephraimites. The latter could not pronounce the sh, and, by saying sibboleth, betrayed themselves, and were slaughtered at the ford. The word shibboleth is still used to mean a test of opinions and manners.

Shield, a portion of defensive armor held in the left hand or worn on the left arm to ward off sword strokes or missiles. The earliest known shields date from the close of the bronze age. They are circular and flat, or but slightly convex, with a central boss, under and across which the handle is fixed. The material is thin beaten bronze.

From the downfall of the Roman empire to the 10th and 11th centuries there seems to have been considerable variety in the forms of the shields in use among European nations, though the circular shield was perhaps the most common. The shields of the Anglo-Saxon invaders of England and of the Scandinavian Vikings were mostly circular. But the Norman shield of the 11th century was kite-shaped, and the triangular form continued to prevail till the 15th century,

becoming gradually shorter and more obtusely pointed, or heart-shaped. After the 14th century the small round buckler came into fashion, and retained its place till the 16th century. By this time the use of firearms had made the shield practically useless in warfare. Many savage tribes still use shields of wood or hide of various forms.

Shield, William, a British composer; born in Swalwall, Durham, March 5, 1748. He studied music with zeal by help of Avison, and composed anthems that were sung in the cathedral of Durham; and ere long he was a conductor of concerts at Scarborough. But he is best known by his songs, among which are "The Heaving of the Lead," "The Arethusa," "The Thorn," "The Ploughboy," and "The Wolf." The tune of "Auld Lang Syne," as now sung, was introduced into his "Rosina," the authorship both of it and of "Comin' through the Rye" have even been claimed for Shield. In 1792 he traveled and studied in France and Italy. At his death, Jan. 25, 1829, he was Master of the King's Musicians.

Shields, Charles Woodruff, an American theologian; born in New Albany, Ind., April 4, 1825; was graduated at Princeton College in 1844 and later at the Princeton Theological Seminary; was ordained in the Presbyterian Church in 1849, and remained in the pastorate till 1865, when he was made Professor of the Harmony of Science and Revealed Religion at Princeton Theological Seminary. In December, 1898, he became a clergyman in the Protestant Episcopal Church, but still continued in his professorship.

Shields, G. O., an American sportsman; born in Batavia, O., Aug. 26, 1846; was mainly self-educated; served in the Union army in 1861–1865; was a writer for the "Inter-Ocean," "Harper's Magazine," Chicago "Tribune," etc., in 1866–1894. In the latter year when "Recreation" was founded he was made its manager and editor. In 1898 he formed the League of American Sportsmen, of which he was president till 1900. He also formed the Camp Fire Club in 1897, and became its president.

Shields, James, an American military officer; born in Dungannon, Ireland, in 1810; came to the United States in 1826; became a lawyer; served through the Mexican War, and was brevetted Major-General for gallantry at Cerro Gordo and Chapultepec. He was elected to the United States Senate from Illinois in 1849, and from Minnesota in 1857. When the Civil War broke out, he volunteered and entered the Federal service. He commanded the division which defeated "Stonewall" Jackson near Winchester, March 23, 1862; was defeated in an engagement with the Confederates at Port Republic, June 9, 1862; and resigned his commission in 1863. He died in Ottumwa, Ia., June 1, 1879.

Shiites, the name given by orthodox Muslims or Sunnites to Ali's followers. They were the champions of Ali's right to be Mohammed's successor as being his cousin and son-in-law; and after Ali's death they took the side of the sons Hassan, Hussein, and Mohammed ibn al-Hanafiyyah. The Persians are Shiites.

Shillaber, Benjamin Penhallow, an American humorist; born in Portsmouth, N. H., July 12, 1814; was best known as the author of the popular sayings of "Mrs. Partington." He was connected with the "Boston Post," the "Saturday Evening Gazette," and other periodicals, and wrote "Rhymes with Reason and Without," "Ike Partington and His Friends," etc. He died in Chelsea, Mass., Nov. 25, 1890.

Shilling, an English silver coin and money of account equal to 12 pence, or the 20th part of a sovereign or pound sterling: and equivalent in the United States to about 24 1-3 cents. In the United States, a denomination of money formerly in use, differing in value relatively to the dollar in different states, but below that of the English shilling, with a corresponding value for the penny and the pound. The diversity arose from the scarcity of coin in the American colonies, and was fixed at an early period in their history. York shilling, a designation given in some parts of Canada to a silver sixpenny piece or English sixpence.

Shiloh, Battle of, one of the most memorable battles of the American Civil War. Shiloh was a locality in Hardin co., Tenn., near Pittsburg Landing, on the Tennessee, and 88 miles E. of Memphis. It took its name from a log chapel known as "Shiloh Church." The battle was fought on April 6 and 7, 1862, Grant and Sherman leading the Federals, and Albert S. Johnston and Beauregard the Confederates. The first day the Confederates, taking the Federals by surprise, drove them from their lines with heavy loss in men and guns; but the second day the Federals, having received reinforcements under Buell, and largely outnumbering the Confederates, regained their lines, and forced the Confederates to retreat to their former position at Corinth. General Johnston was killed on the first day. The Federal loss was placed at 13,573; the Confederate at 10,699.

Shindler, Mary Stanley Bunce Palmer, an American author; born in Beaufort, S. C., Feb. 15, 1810. Her poems were very popular through the South. She died in 1883.

Shiner, a little silvery fish found in all American streams from New England to Kansas and Alabama. It grows only about 10 inches long and is of little consequence as a food fish.

Shingle, a thin piece of wood, having parallel sides, and thicker at one end than the other, commonly used as a roof covering instead of slates, tiles or metal.

Shingles, a popular name for an eruptive skin disease, which usually starts from the backbone and goes half round the body, forming a belt of inflamed patches with clustered vesicles. It rarely encircles the body, though the popular opinion that if it does it will prove fatal is a delusion.

Shin Plaster, a bank-note, especially one of a low denomination; a piece of paper money. According to Bartlett, from an old soldier of the Revolutionary period having used a quantity of worthless paper currency as plasters for a wounded leg.

Shinto, the religious belief of the people of Japan prior to the introduction of Buddhism from Korea in A. D. 552. The new belief almost entirely absorbed the old, being, however, itself modified in the process.

Shiogoon, or **Tycoon,** the title of the hereditary military ruler of Japan for many centuries till the revolution of 1868, which reinstated the Mikado in power.

Ship, in the most general sense, a vessel intended for navigating the ocean. In contradistinction to boat, which is the most general term for a navigable vessel, it signifies a vessel intended for distant voyages. Ships are of various sizes, and fitted for various uses, and receive various names, according to their rig and the purposes to which they are applied, as man-of-war ships, transports, merchantmen, barques, brigs, schooners, luggers, sloops, xebecs, galleys, etc. The name as descriptive of a particular rig, and as roughly implying a certain size, has been used to designate a vessel furnished with a bowsprit and three or four masts, each of which is composed of a lower mast, a top mast, and a top-gallant mast, and carrying a certain number of square sails on each of the masts. These masts are named, beginning with the foremost, the fore, the main, and mizzen masts; and when there is a fourth it is called the jigger mast. The principal sails are named according to the masts to which they belong. Owing to increase of size and the development of steam navigation the restricted application of the term ship is now of little value.

Ship Canal, a canal for the passage of sea-going vessels. Ship canals are intended either to make an inland or comparatively inland place a seaport; to connect sea with sea, and thus obviate a long ocean navigation; or to promote direct navigation by avoiding natural obstructions.

The artificial waterways which may properly be termed ship canals are nine in number:

(1) The Suez Canal, begun in 1859 and completed in 1869. (2) The Kronstadt and St. Petersburg Canal, begun in 1877 and completed in 1890. (3) The Corinth Canal, begun in 1884 and completed in 1893. (4) The Manchester Ship Canal, completed in 1894. (5) The Kaiser Wilhelm Canal, connecting the Baltic and the North Seas, completed in 1895. (6) The Elbe and Trave Canal, connecting the North

Sea and the Baltic, opened in 1900. (7) The Welland Canal, connecting Lake Erie with Lake Ontario. (8) and (9) The two canals, United States and Canadian, respectively, connecting Lake Superior with Lake Huron.

The business of the St. Mary's Falls canals by far surpasses in volume that of any other canal of the world, the freight tonnage of the American and Canadian canals combined being in 1901 24,626,976 registered tons, while the net tonnage of the Suez Canal in 1900 was 9,378,152 tons, and that of the Kaiser Wilhelm Canal 4,282,094 tons.

Ship Pendulum, a pendulum with a graduated arc, used in the navy to ascertain the heel of a vessel, so that allowance may be made in laying a gun for the inclination of the deck.

Shippen, Edward, an American physician; born in New Jersey, June 18, 1826; was graduated at Princeton College in 1845, and at the University of Pennsylvania in 1848, and commissioned surgeon in the navy in 1861. He was on the "Congress" when she was destroyed by the "Merrimac" in Hampton Roads; was present at both attacks on Fort Fisher, as surgeon on the "New Ironsides"; and served in the operations at Bermuda Hundred. After the Civil War he made the Russian cruise under Admiral Farragut; was commissioned medical inspector in 1871; fleet surgeon of the European squadron in 1871–1873; in charge of the Naval Hospital in Philadelphia in 1874–1877; became medical director in 1876; and was president of the naval medical examining board in 1880–1882. He was a member of several medical and naval organizations, and author of "Thirty Years at Sea"; "A Christmas at Sea," and numerous magazine articles.

Ship Railway, a railway system for the transportation of vessels over stretches of land. The most noteworthy one was that planned by James B. Eads for the transportation of vessels across the Isthmus of Tehuantepec. It was devised as a saving in time and money over the Panama or Nicaraguan canal routes, and a company was incorporated in 1887 to construct it, but Captain Eads dying soon after, the scheme was abandoned.

Ship's Papers, the papers or documents required for the manifestation of the property of the ship and cargo. They are of two kinds: (1) Those required by the laws of a particular country, as the certificate of registry, license, charter-party, bills of lading, bills of health, etc., required by the laws of the United States to be on board American ships. (2) Those required by the laws of nations to be on board neutral ships, to indicate their title to that character.

Ships, Registration of, the enrollment of ships on a government register. In the United States the navigation laws require all vessels to be registered periodically, and steam vessels to be inspected and certificated. A list of merchant vessels is published analogous to Lloyd's list issued in London. The Bureau of Navigation, in the Treasury Department at Washington, has charge of registration.

Ship Worm, an animal rightly called the teredo; once thought to be a worm, but is not a worm, though its body looks long and worm-like. It is covered with a sort of sheath or shelly coat, and is a kind of mollusk. It is called ship worm because it bores holes into ship timbers, and often injures them so much that they will crumble at the touch. Not only ships' timbers but all other kinds of woodwork under water are eaten by it. Once the coast of Holland was threatened with a deluge because the ship worm ate the piles of the dyke which kept out the sea, and it cost a great deal of money to repair them. Ships' bottoms are covered usually with copper plates to save their timbers and planks from these animals.

Shire, in the United States, a division of a State, comprising several contiguous townships — a distinction must be drawn between the application of this word as between English and American usage; as, for instance, it is correct in the United States to say "the county of Berkshire"; whereas in England such an expression would be tautological, or, in other words, would convey the sense of "a county of a county."

Shirley, James, an English dramatist; born in London, England, Sept. 13, 1596; went to Merchant Taylors' School, whence he passed in

1612 to St. John's College, Oxford. Most of his plays are tragi-comedies and his best work is ever the tragic and pathetic portions. In 1646 he printed a volume of his poems, including his masque of "The Triumph of Beauty." As a writer of masques he is second only to Ben Jonson. He died in poverty, Oct. 29, 1666.

Shishak, the name of several monarchs of the 22d or Bubastite Egyptian dynasty.

Shitepoke, the small, green heron of North America. The plumage of its crest and upper parts is mainly glossy green; the under parts are brownish-ash, varied with white on its belly. Also called poke and fly-up-the-creek.

Shittim Wood, the wood of the shittah tree of the Bible, of which the tabernacle in the wilderness was principally constructed. It is a light but cross-grained and enduring wood, of a fine orange-brown color.

Shoad, or **Shode,** in mining, surface ore in pieces mixed with other matters, and indicating the outcrop of a lode or vein in the vicinity. The method of finding the vein by tracing the shoad stones to their source at the strike is called shoading. Holes dug to prospect or intercept the vein are called shoad pits.

Shock, a collection of sheaves standing together in the field for the grain to ripen; also called a shook or stook. It has usually 12 sheaves, but customs differ. Also a collection of cut stalks of corn standing in the field around a central core of four stalks, whose tops are diagonally woven together and bound at the intersection.

In electricity: Frictional: it is a sensation as of a more or less painful concussion or blow attended by a sudden contraction or convulsion of the muscles, produced by a discharge through them of electricity from a charged body.

Shock, William Henry, an American engineer; born in Baltimore, Md., June 15, 1821; entered the United States navy as an assistant engineer in 1845; served in the Mexican War, and was promoted chief engineer March 11, 1851. He superintended the building of the marine engines at West Point, N. Y.; was president of the examining board of engineers in 1860–1862; had charge of the construction of the river monitors at St. Louis in 1862–1863; was fleet engineer under Admiral Farragut at Mobile and later under Admiral Thatcher in 1863–1865; and engineer-in-chief of the navy in 1877–1883, being retired June 15, 1883. He invented and patented numerous improvements in guns, steam devices, etc., and was the author of "Steam Boilers; Their Design, Construction and Management."

Shoddy, old woolen or worsted fabrics torn to pieces by a machine having spiked rollers (termed a devil), cleansed, and the fiber spun with a certain proportion of new wool, the yarn being afterward woven into the full bodied but flimsy fabric also known as shoddy, and made into cheap cloth, table covers, etc.

SHOE-BILLED STORK.

Shoe, a covering of protection for the foot, usually of leather. The ancients usually wore sandals. The cres-

cent was employed as an ornament on the shoes of Romans of exalted rank, who appear to have carried on the art of shoe making with great taste and skill. Only one instance is known of an ancient monument exhibiting shoes with separate heel pieces. The custom of making shoes right and left was common in classical times. The fashion of shoes and boots, as has occurred with other articles of dress, has undergone innumerable changes. At one time these were pointed to an extravagant degree and in the 18th century the high heels of ladies shoes became a monstrosity.

Shoe-Billed Stork, in ornithology, Balæniceps rex, a large stork found on the upper Nile. It figures in many Arab myths. Called also the boot bill.

Shooter's Island, an island between Newark Bay and Staten Island; chiefly noted for its large shipbuilding plant, where the new yacht for the Emperor of Germany, which was launched Feb. 25, 1902, was built.

Shooting Star, a small celestial body suddenly becoming luminous and darting across the sky, its course being marked by a streak of silvery radiance, which is an optical illusion caused by the rapidity of its passage.

Shorey, Paul, an American educator; born in Davenport, Ia., Aug. 3, 1857; was graduated at Harvard University in 1878; admitted to the bar in Chicago in 1880; was Professor of Greek at Bryn Mawr College in 1885–1892. In the latter year he accepted a similar chair at the University of Chicago.

Short, Charles, an American educator; born in Haverhill, Mass., May 28, 1821; was graduated at Harvard University in 1846. In 1863 he accepted the chair of moral and intellectual philosophy and the presidency of Kenyon College, Ohio; was Professor of Latin at Columbia University in 1868–1886. He died in New York city, Dec. 24, 1886.

Shorter Catechism, a Presbyterian catechism composed under the direction of the Westminster Assembly. It was called Shorter to distinguish it from the Larger Catechism, which had been finished just previously. A small Committee of Assembly was appointed on Aug. 5, 1647, to prepare the Shorter Catechism. When completed, it was presented to the British Parliament on Nov. 26. Both Houses of Parliament thanked the divines who had composed it, and ordered 600 copies, but requested that proofs should be appended. This being done, the Catechism with proofs was presented to Parliament on April 16, 1648, and ordered to be printed. It was adopted by the Scotch General Assembly on July 28, 1648, the decision being ratified by the Scotch Parliament on Feb. 7, 1649. It is still most extensively used among English-speaking Presbyterians all over the world.

Shorthand, an art by which writing is abbreviated, so as to keep pace with speaking. Its great and general utility has been recognized in every age, and numberless systems have been devised to facilitate its acquirement. It was practised by the ancients for its secrecy as well as for its brevity, and a work is extant on the art, which is ascribed to Tiro, the freedman of Cicero. The first English treatise on stenography, in which marks represent words, was published in 1588 by Timothy Bright, M. D., under the title, "Characterie; an Art of Short, Swift, and Secret Writing by Character."

In 1837 appeared Pitman's "Phonography" — the first really popular system. Melville Bell, following in the path marked out by Pitman, founded his system on the sounds of the language. The first sketch appeared in 1849; in 1852 the first complete edition, under the title "Semi-Phonography."

Shorthand is now largely practised in both the United States and England, and has extended its benefits to many classes besides that of the professional reporter. This is due chiefly to the excellences of Pitman's system and to his activity in disseminating its principles. The existence of two styles of phonography, one adapted for letter writing and the other for reporting — the second, however, being only an extension of the first, and not a new system in itself — has been the chief basis of the popularity of phonetic shorthand. Popular modifications of Pitman's system have been made in the United

States by Graham, Burnz, and Munson.

Shorthorn, a breed of cattle characterized by short horns, rapidity of growth, aptitude to fatten, and good temper. It was produced by Charles and Robert Colling, at Ketton and Barmpton, near Darlington, England, by a process of in-and-in breeding between 1780 and 1818. The process has been followed in the United States since 1817.

Shoshone Falls, an attractive fall in the Lewis or Snake river, Idaho. They rank among the waterfalls of North America, next to those of Niagara in grandeur, being about 250 yards wide and 200 feet high.

Shoshone Indians, a family of American Indians, also known as Snakes, living since 1805 to the W. of the Rocky Mountains; they are now on four reservations, two in Idaho (1,231), one in Wyoming (842), and one in Nevada (329). Hostilities ceased in 1867, after an expedition had destroyed a great part of their braves and stores. Total number 2,402.

Shot, any solid projectile; those for cannon and carronades being of iron, those for small arms of lead. The latter are known as bullets and small shot. The shot discharged from artillery are no longer made solid, if of more than three pounds in weight, except when made for old style ordnance, such as smooth bore or Armstrong guns. Even the Pallister chilled shot used for piercing armor are not solid, but are made with a small internal cavity.

Shoulder Joint, the articulation of the upper arm or humerus with the glenoid cavity of the scapula or shoulder blade. The shoulder joint forms an example of the ball-and-socket joints, the ball-like or rounded head of the humerus working in the shallow cup of the glenoid cavity. Such a form of joint necessarily allows of very considerable movement, while the joint itself is guarded against dislocation or displacement by the strong ligaments surrounding it, as well as by the tendons of its investing and other muscles.

Shovel, Sir Cloudesley, an English naval officer; born probably in Clay, a Norfolk fishing village, about 1650. He was apprenticed to a shoemaker, but he ran away to sea, and rose by his remarkable ability and courage until in January, 1705, he was made rear-admiral of England. That year he took part with Peterborough in the capture of Barcelona, but failed in his attack on Toulon in 1707. On the voyage home his ship, the "Association," struck a rock off the Scilly Isles on the foggy night of Oct. 22, 1707, and went down with 800 men on board. Four vessels of his squadron perished with as many as 2,000. Sir Cloudesley Shovel's body was washed up next day and buried in Westminster Abbey.

Shovel Fish, a genus of ganoid fishes belonging to the sturgeon family, and found in North American rivers. It is so named from the flattened form of the head.

Shoveler, in ornithology, the broadbill or spoonbill duck, widely distributed over the Northern Hemisphere. Length about 20 inches; bill much widened on each side near tip,

SHOVELER DUCK.

somewhat resembling that of the spoonbill; head and upper part of neck in adult male rich green, lower part white, back brown, breast and abdomen chestnut brown.

Showers of Fishes occasionally fall in different parts of the world, exciting great astonishment. Such downfalls are more common in tropical countries. In India a shower of fishes varying from a pound and a half to three pounds in weight has been re-

ported. They are always of kinds abundant in the sea or fresh waters of the neighborhood.

Shrapnel, Henry, an English inventor, entered the Royal Artillery in 1779, served with the Duke of York's army in Flanders, and shortly after the siege of Dunkirk invented the case shot known by the name of shrapnel shells, an invention for which he received from government a pension of $6,000 a year in addition to his pay in the army. He retired from active service in 1825, attained the rank of Lieutenant-General in 1827, and died in 1842.

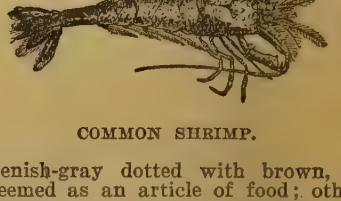
Shreve, Henry Miller, an American inventor; born in Burlington co., N. J., Oct. 21, 1785; early engaged in navigation on the Western rivers, and in 1815 ascended the Mississippi to Louisville, Ky., in the "Enterprise," the first steam vessel that ever performed such a voyage. Later he built the "Washington" of 400 tons burden, with improvements on Robert Fulton's steamboat; remodelled it in 1824, so as to operate each of the side wheels with a separate engine; invented the snag boat "Heliopolis," for removing snags and sawyers from rivers; and in 1829 patented a steam battering ram for harbor defense. In 1826 he was made superintendent of improvements in Western rivers, and continued in that office till 1841. He died in St. Louis, Mo., March 6, 1854.

Shrew, in zoölogy, a popular name for any individual of the Soricidæ. The common shrew is about the size of a mouse, which it somewhat resembles in the shape of the body, feet and tail, but has the muzzle protruded with prominent nostrils, far beyond the lip; the eyes are small, and scarcely discernible through the fur; ears wide and short. They feed on insects and worms and the smaller mollusca; they are extremely pugnacious, and two males scarcely ever meet without a battle, when the weaker is killed and eaten.

Shrew Mole, a genus of insectivorous mammals, belonging to the family of shrew mice, but also by some zoölogists placed in the mole family. It is found in North America, usually near rivers and streams, and burrows after the fashion of the common mole, like which, also, its fur is fine and closely set. The average length is about seven inches.

Shreyvogel, Charles, an American artist; born in New York city Jan. 4, 1861; and for the excellence of his work was awarded the "Thomas B. Clarke Prize" at the National Academy of Design in New York city together with a medal at the Paris Exposition in 1900.

Shrimp, a popular name for an individual of the genus Crangon, allied to lobster, crayfish, and prawn. The common shrimp about two inches long



COMMON SHRIMP.

greenish-gray dotted with brown, is esteemed as an article of food; other species, from warmer latitudes, are equally prized. They are usually taken by a net.

Shrine, a case, a box, or reliquary in which the bones or other remains of saints were deposited. They were often richly ornamented with gold precious stones, and elaborate carvings, and were generally placed near the altar of the church.

Shrouds, a range of large ropes extended from the heads of the lower masts to both sides of a ship to support the masts, and named, from the masts to which they belong, the main, fore, and mizzen shrouds. Topmast, topgallant, and bowsprit shrouds are all similar in their object.

Shrub, in botany, a plant with woody stem and branches like a tree but of smaller size, not generally exceeding 20 feet in height, and branching near the root, so as to have no main stem of considerable height. When a shrub is of small size and much branched, it is often called a bush. There is no more important botanical distinction between trees and shrubs, and the same genus very often includes species of both kinds. Many shrubs, as honeysuckles, are climbers

Also a liquor composed of acid, particularly lemon juice and sugar, with spirit to preserve it.

Shufeldt, Robert Wilson, an American surgeon; born in New York city, Dec. 1, 1850; was graduated at the Medical Department of Columbia University in 1876. He was 1st lieutenant and later captain in the medical department of the army in 1876–1889; and was honorary curator of the Smithsonian Institution, 1895–1897.

Shumway, Edgar Solomon, an American educator; born in Belchertown, Mass., June 6, 1856; was graduated at Amherst College in 1879; then studied abroad, was adjunct and full Professor of Latin Language and Literature at Rutgers College in 1883–1900. He lectured on Roman law at the University of Pennsylvania in 1900, was also for some years university extension lecturer for New Jersey and New York on Greek and Hellenistic and Roman art.

Shurtleff, Roswell Morse, an American artist; born in Rindge, N. H., June 14, 1838; was graduated at Dartmouth College in 1851. He has made numerous paintings of landscapes in both water and oil; many of the most excellent of these are scenes in the Adirondacks.

Shute, Daniel Kerfoot, an American physician; born in Alexandria, Va., Oct. 22, 1858. He graduated at Columbia University in 1879, and at its Medical Department in 1883. He was made Professor of Anatomy at the Medical Department of Columbia University in 1888.

Shut-in Society, an organization in the United States founded for the purpose of brightening the life of persons in sickness by providing various objects which they would otherwise be unable to obtain. The members of local societies, besides supplying their sick members with fruit, flowers, reading material, medicines, and nourishing food, also undertake to supply easy chairs and other helps to convalescents. The Shut-in Society is not connected with any religious or other organization.

Shuttle, Schyttyl, or **Shyttell,** in weaving, an instrument used by weavers for shooting or passing the thread of the weft from one side of the web to the other, between the threads of the warp. It is a boat shaped piece of wood which carries a bobbin or cop containing the yarn of the weft or woof.

In a sewing machine, the sliding threadholder which carries the lower thread between the needle and the upper thread, to make a lock stitch. In hydraulic engineering, the gate which opens to allow the water to flow onto a wheel. That side of a wheel which receives the water is known as the shuttle side.

Siam, a kingdom embracing a great part of the Indo-Chinese Peninsula, and part of the Malay Peninsula, and lying between Burma on the W., and Annam and Cambodia on the E. and S. E. Its boundaries are ill defined on the N. and N. E., but its area is estimated at about 300,000 square miles, and its population at 5,000,000.

A large part of the territory is not well known. Siam proper consists mainly of the low lying alluvial basin of the Menam and its numerous tributaries, which flows S. into the Gulf of Siam, forming an extensive and intricate delta, on which is situated Bangkok, the capital. This alluvial plain, intersected by numerous streams and canals, is extremely fertile, producing crops of rice, sugar, cotton, maize, and indigo. Both sides of the Manam basin are skirted by densely wooded ranges of hills, forming the water partings toward the Salwin and Mekong, the latter of which is the great river of Eastern Siam. The minerals include gold, tin, iron, copper, lead, zinc, and antimony, besides several precious stones, such as the sapphire, Oriental ruby, and Oriental topaz. Mining is chiefly in the hands of the Chinese. Cocoa and areca palms are numerous in Siam; fruits are abundant and of excellent quality; black pepper, tobacco, cardamoms, and gamboge are important products. The forests produce aloes wood, sappan wood, teak timber, bamboos, rattans, gutta percha, dammar, catechu, benzoin, etc. Among wild animals are the tiger, leopard, bear, otter, orang-outang, single-horned rhinoceros, and elephant, which here attains a size and beauty elsewhere unknown. The last, when of a white color, is held in the highest reverence. The forests abound

with peacocks, pheasants, and pigeons; and in the islands are large flocks of the swallows that produce the famed edible birds' nests. Crocodiles, geckoes, and other kinds of lizards, tortoises, and green turtles are numerous. The python serpent attains an immense size, and there are many species of snakes.

Nearly the whole of the trade of Siam is in the hands of foreigners, and the foreign trade centers at Bangkok. The chief export is rice, after which come teak, pepper, dried fish, birds' nests, cattle, and teel seed. The chief imports are gold leaf and treasure and cottons, after which come opium, china goods, gunny bags, hardware, kerosene oil, and silk goods. The trade is chiefly with Hong Kong and Singapore, and to a much less extent with Lower Burma and Great Britain.

The Siamese are members of the great Mongolian family, and of the same race as the people of Burma and Annam. The Siamese profess Buddhism, introduced into the country about the middle of the 7th century. Christianity is now making some progress in the country. The language forms a connecting link between the Chinese and Malay. The written characters seem to be derived from a form of Sanskrit.

The legislative power is exercised by the king in conjunction with a council of ministers. The present king is Chulalongkorn I., who was born in 1853 and succeeded his father in 1868. Like his father he has had an education in English, and is alive to the advantages to be obtained by adopting European inventions and discoveries.

Siamang, in zoölogy, a gibbon from Sumatra and the Malay peninsula. It is larger than the rest of the genus (true gibbons), and has abnormally long pectoral limbs. It can walk fairly well in the erect position, by balancing itself with its arms, or by placing them over the head, and is quiet and affectionate in captivity.

Siamese Twins, the best known example of two male individuals having their bodies connected inseparably from their birth, being joined by a thick fleshy ligament from the lower end of the breastbone of each, having the common navel on its lower border so that they stood in a sort of oblique position toward each other. Born i Siam in 1811, of a Chinese father an a Chino-Siamese mother, and name Eng ("right") and Chang ("left") they were brought to the United State in 1829. They were on exhibition i America and Europe a number of time and ultimately settled in North Car line. They married two sisters an had large families of children, nor of whom exhibited any malformatio Chang received a paralytic stroke i 1870, and three years later was affec ed with an inflammatory disease of th respiratory organs. He died unex pectedly, Jan. 17, 1874, while h brother was asleep, and Eng died few hours afterward. The Siames twins attracted great attention durin their lifetime, particularly from phys ologists and medical men, some o whom thought that the ligament con necting them might have been cu without causing the death of eithe

Siberia, a great division of th Russian dominions; occupies all Nort Asia, stretching uninterruptedly f from the Ural Mountains to the Pa cific Ocean, and S. from the Arcti Ocean to the Chinese dominions an Russian Central Asia; total area, 4 883,496 square miles; pop. (1897) 5 727,090. It is divided into the gov ernor-generalships of Western Siberia Eastern Siberia, and the Amur regio A region of such vast extent has nat urally a very diversified configuration but generally speaking Siberia may b considered as a vast inclined plan sloping gradually from the Alta Syan, and Yablonoi Mountains on th S. to the Arctic Ocean on the N. I the E. it is traversed in different direc tions by several mountain ranges, bu elsewhere it is almost unbroken b any greater heights than a few hills The coast line is very extensive, bu the Arctic Ocean is ice bound at leas 10 months out of the 12, and is almos valueless for commercial purposes.

Siberia has a warm summer, bu the winter is exceedingly severe. Soutl Siberia has, in many parts, a very fer tile soil, which yields rich crops o wheat, rye, oats, and potatoes; bu immense tracts of Siberia are utterl unfit for tillage, more particularly th tundras, or great stretches of bogg country along the Arctic Ocean. Cat tle breeding and bee keeping are large

ly pursued. Hunting and fishing are also sources of remuneration, ermines, sables, and other furbearing animals being numerous. The wild animals include the elk, reindeer, and other deer, bear, wolf, white and blue fox, lynx, etc. The forests are extensive and valuable. Manufactures and mining are in a backward state, though Siberia has very considerable mineral wealth. Large quantities of gold are obtained, as well as silver, platinum, lead, iron, coal, etc. The trade is mainly with Russia, which takes every year from Siberia about $20,000,000 worth of raw products, chiefly tallow, hides, furs, and grain; and sends every year to Siberia about $60,000,000 worth of manufactured wares. The foreign trade is insignificant. Yermak the Cossack, entered Western Siberia in 1580, and made a rapid conquest of the W. portion of the country, which he handed over to Ivan the Terrible of Russia. Exile to Siberia began soon after the conquest, and ever since Siberia has been a great penal colony. Hardened convicts and important political offenders are kept under close control, but the great majority of the exiles are simply placed in a particular district and allowed to shift for themselves. The Russian population of Siberia, which is more than three-fourths of the whole, consists largely of exiles or the descendants of exiles. The railway connection between Russia and Siberia forms the greatest railway system in the world.

Sibley, Henry Hastings, an American military officer; born in Detroit, Mich., Feb. 20, 1811. He was elected the first governor of Minnesota in 1858; organized and led a military force against the Sioux Indians in 1862; and was commissioned a Brigadier-General of volunteers. He put an end to the Sioux War in 1863, and was brevetted Major-General. During the last 20 years of his life he took no active part in political issues, but identified himself with the educational interests of the State. He died in St. Paul, Minn., Feb. 18, 1891.

Sibley, Henry Hopkins, an American military officer; born in Natchitoches, La., May 25, 1816; was graduated at the United States Military Academy in 1838; served in the Mexican War and in Florida; took part in the notable military expedition to Utah; and was conspicuous in the campaign against the Navajo Indians. He entered the Confederate army in 1861 and attained the rank of Brigadier-General. He went to Egypt after the war, and in 1869 entered the Egyptian army and as Brigadier-General served under the Khedive. In 1875 he returned to the United States, and died in Fredericksburg, Va., Aug. 23, 1886.

Sibley, John Langdon, an American librarian; born in Union, Me., Dec. 29, 1804; was graduated at Harvard College in 1825; and was chief librarian of Harvard University in 1856–1877, when he was retired from active service and made librarian emeritus. He was a Fellow of the American Academy of Arts and Sciences and of the Massachusetts Historical Society; founder of a charity fund of Phillips Exeter Academy; author of numerous biographical sketches and editor of the "American Magazine of Useful Knowledge." He died in Cambridge, Mass., Dec. 9, 1885.

Sicard, Montgomery, an American naval officer; born in Utica, N. Y., Sept. 30, 1836; was appointed to the navy in 1851; promoted lieutenant in 1861; and assigned to the Gulf blockading squadron in 1861. As executive officer of the "Oneida" he participated in numerous engagements. Later, as commander of the "Seneca," he participated in both attacks on Fort Fisher. At the outbreak of the Spanish-American War he was placed on the sick list, and the command given to Rear-Admiral Sampson; but after a partial recovery he was made president of the Board of Srategy. He died in Westernville, N. Y., Sept. 14, 1900.

Sicilian Vespers. Charles of Anjou, brother of Louis IX., King of France, having seized Sicily by virtue of a grant from Pope Alexander IV., the natives rose against the French the day after Easter, March 30, 1282. The massacre which ensued commenced at Palermo, extended to Messina and other parts of the island, and is known in history as the Sicilian Vespers.

Sicilies, The Two, a former kingdom of Italy, consisting of Naples (or S. Italy) and Sicily. In 1047, while Greeks and Saracens were struggling for the possession of Lower Italy

and Sicily, the 12 sons of Tancred de Hauteville, a count in Lower Normandy, came in with their followers. Robert Guiscard, one of these brothers, subdued Apulia and Calabria, taking the title of duke, and his youngest brother, Count Roger, conquered Sicily. Roger's son and successor, Roger II., completed the conquest of all Lower Italy by subduing Capua, Amalfi, and Naples, at that time celebrated commercial republics, and in 1130 took the title of king, calling his kingdom the Kingdom of the Two Sicilies. In 1759, when Charles IV. ascended the Spanish throne under the name of Charles III., he conferred the Kingdom of the Two Sicilies on his third son Ferdinand, and decreed at the same time that it should never again be united to the Spanish monarchy. The reign of Ferdinand extended through the stormy period of the French Revolution and the subsequent European commotions. A varied experience followed during which the country was successively subject to Germany, France, and Spain. In 1860, an insurrection broke out in Sicily, and an expedition of volunteers from Piedmont and other Italian provinces under Garibaldi sailed from Genoa to the assistance of the insurgents. The result was that the Neapolitan troops were driven from the island. Garibaldi, following up his success, crossed over to the mainland, where he met little or no opposition; Francis II. fled from Naples; the strong places in his hands were reduced; and by a popular vote the Kingdom of the Two Sicilies ceased to exist as such and became an integral part of the Kingdom of Italy.

Sicily, an island belonging to the kingdom of Italy, in the Mediterranean, the largest and the finest in that sea, lying at the S. W. extremity of Italy, from which it is parted by the narrow Strait of Messina. Area, 9,936 square miles; pop. (estimated 1900) 3,643,038. The plains and valleys which compose the greater portion of the island are remarkably fertile, and yield large crops of maize, wheat, rice, pulse, all kinds of vegetables, and abundance of fruits; the silk worm is largely cultivated. The minerals are marble, iron, copper, stone, agate, jasper, salt, and coal, while of sulphur the yield is enormou — above 150 mines, finding constar work for 12,000 men. The manufa tures, generally unimportant, are silk hats, furniture, skins, cotton, and cu lery; the exports comprise all nati produce, with linseed, manna, rag and tanned leather.

Sickle, in husbandry, a reapir hook; a hooked blade, flattened in th plane of its curve and sharpened c its inner edge, used for cutting grov ing grain. In astronomy, a group stars in the constellation Leo, reser bling a sickle in form.

Sickles, Daniel Edgar, majo general U. S. A., retired; born Ne York, Oct. 20, 1825. Was admitte to the bar in 1844, was a member the legislature in 1847, corporatio attorney of New York in 1853, ar appointed secretary of American leg tion in London, same year. He wa also major in the 12th Regiment the New York National Guard. Wa in the State Senate 1856–1857, ar in the latter year was elected to Co gress, and reëlected in 1859. C February 27th, 1859 he shot and kille Philip Barton Key for intimacy wit Mrs. Sickles, and after a trial whic lasted twenty days he was acquitte of the charge of murder. His brave in the Civil War was recognized b promotion to major-general, and l lost a leg at Gettysburg. He wa placed on the retired list of the arm with the rank of major-general, ar was United States minister to Spai 1869–1873. He has since been pres dent of the New York State Board Civil Service Commissioners, Commi sioner of Emigration, Sheriff of Ne York, and member of Congress.

Siddons, Mrs. Scott, an Englis actress; born in India in 1844; th great-granddaughter of Sarah Siddons was educated in Germany. As Lad Macbeth she made her first professio al appearance in England, at Nottin ham. She appeared in the Unite States first as a dramatic reader New York city, and she made her d but as a dramatic star at the Bosto Museum about 1868.

Sidereal Clock, a clock regulate to measure sidereal time, reckoned b sidereal days of 23 hours, 56 minute 4 seconds mean solar time, which a measured by the interval between tw

successive passages of any fixed star over the same meridian, and divided into 24 sidereal hours.

Sidereal Time, time measured by the apparent motion of the stars. A sidereal day is the time from the passage of a star across the meridian till its next passage, and is exactly the period of the revolution of the earth on its axis. It is the most constant unit of time we possess. Its length is 23 hours 56 minutes 4.098 seconds. A sidereal year is the period in which the fixed stars apparently complete a revolution and come to the same point in the heavens, and is the exact period of the revolution of the earth round the sun. There are 366.2563612 sidereal days in a sidereal year.

Sidney or **Sydney, Algernon,** an English military officer; born in Penshurst, Kent, in 1622. In 1644 he was lieutenant-colonel of a regiment of horse in Manchester's army, and was severely wounded at Marston Moor. In 1645 he was given the command of a cavalry regiment in Cromwell's division of Fairfax's army, and was returned to Parliament for Cardiff. He was nominated one of the commissioners to try Charles I., but took no part in the trial, though he approved of the sentence. He was soon after appointed a commissioner to mediate a peace between Denmark and Sweden, and while he was engaged in this embassy the Restoration took place. Conscious of the offense he had given the royal party he refused to return and remained an exile for 17 years. At length, in 1677, the influence of his friends procured him permission to return to England. After the death of Shaftesbury in 1682, he entered into the conferences held between Monmouth, Russell, Essex, Hampden, and others, and on the discovery of the Rye House Plot he was arrested and sent to the Tower on a charge of high treason. He was tried before the notorious Chief-Justice Jeffreys, and his trial was conducted with a shameless absence of equity which has conferred on him all the glory of a martyr. He was executed on Tower Hill, Dec. 7, 1683. His "Discourses Concerning Government" were first printed in 1698.

Sidon, anciently a city of Phœnicia; on the E. coast of the Mediterranean; half way between Tyre and Beyrout. It soon rose, both by its exceptional position and the enterprising character of its inhabitants, to the first position among the cities of Phœnicia, so that the whole country is sometimes designated by the name Sidon, "The Great," "the Metropolis." The extensive commerce of Sidon is well known from ancient authorities. At length it surrendered to Shalmaneser, King of Assyria. But under Assyrian, Chaldean, and Persian domination it retained a kind of independence for its internal affairs, and under the Persians reached its highest prosperity. Through the Middle Ages little is heard of it, except that it was taken by the Crusaders. The present town of Saida has 10,000 inhabitants, of whom 7,000 are Mohammedans. The town was stormed by the allies under Napier in 1840.

Siege, State of. The "state of siege" as defined by continental jurists is a condition of things in which civil law is suspended or made subordinate to military law. A fortress, city, or district is thus put under martial law — i. e. under the authority of the military power — either on account of the presence of an enemy, as at a siege, or because of the failure of the civil power, as in the case of domestic insurrection, or of a conquered district in military occupation. The "minor state of siege," a modification of the more severe rule, usually suffices for domestic troubles. No such provision is made by the laws of the United States, or of the British empire, though very similar powers are exercised when martial law is proclaimed.

Siege Gun, a cannon sufficiently light to be conveniently transported, and throwing projectiles adapted for breaching fortifications in sieges.

Siemens, Sir Charles William, a German engineer; born in Hanover, April 4, 1823. The great works of Siemens Brothers at Charlton, West Woolwich, for the manufacture of submarine electric telegraph cables, were established in 1858; and the great steel works at Landore, Swansea, in 1868. He labored mainly in two distinct fields, the applications of heat and the applications of electricity, and won a great reputation

in both. He was knighted, April 1883, in recognition of his services, which had been previously recognized by numerous scientific societies, and by the Universities of Oxford, Glasgow, Dublin, and Wurzburg. He died in London, Nov. 19, 1883.

Siemens, Werner von, a German engineer and electrician; born in Leuthe, Hanover, Dec. 13, 1816. He early showed scientific tastes, and in 1841 took out his first patent for galvanic silver and gold plating. He was of peculiar service in developing the telegraphic system in Prussia, and discovered in this connection the valuable insulating property of gutta-percha for underground and submarine cables. In 1849 he left the army, and shortly after the service of the State altogether, and devoted his energies to the construction of telegraphic and electrical apparatus of all kinds. Besides devising numerous useful forms of galvanometers and other electrical instruments of precision, Werner Siemens was one of the discoverers of the principle of the self-acting dynamo. In 1886 he gave 500,000 marks for the founding of an imperial institute of technology and physics; and in 1888 he was ennobled. He died in Berlin, Dec. 6, 1892.

Sienkiewicz, Henry, a Polish author; born in Lithuania in 1845. He is the author of the historical novel "Quo Vadis," "Sword and Fire," "Knights of the Cross," etc.

Sierra, a chain of hills or mass of mountains with jagged or saw-like ridges.

Sierra Madre ("Main Chain"), a general name for the mountains that in Mexico stretch N. from about Guadalajara to Arizona, forming the W. wall of the plateau, and separating Chihuahua from the maritime States of Sinaloa and Sonora. Along the E. foothills of the range, in Northwest Chihuahua, the country is very fertile. The so-called Sierra Madre plateau, on the United States frontier, is a continuation of the Chihuahua plateau. The name has often been more widely extended, however, to include the central and E. ranges of the Cordilleras.

Sierra Nevada, a mountain range of California, extending N. and S. along the E. boundary of the State. It consists of an aggregate of ranges, on an average some 70 miles wide, with numerous peaks reaching an elevation of 10,000 and 15,000 feet. Gold mining, timber cutting, and sheep rearing are important industries in these ranges.

Siesta, the name given to the practice indulged in by the Spaniards, and the inhabitants of hot climates generally, of sleeping two or three hours in the middle of the day, when the heat is too oppressive to admit of their going from home.

Sieyes, Emmanuel Joseph, better known as the Abbe Sieyes, a French revolutionist; born in Frejus, France, May 3, 1748, and pursued his studies for the Church at Paris. During the Reign of Terror he withdrew into the country, but after Robespierre's downfall he returned to the convention and took an active part in affairs. In 1799, on his return from a mission to Berlin, by which he secured the neutrality of Prussia, he became a member of the directory. He subsequently suppressed the Jacobin Club, and was active in bringing about the overthrow of the directory and the substitution of the consular government by the revolution of the 18th Brumaire, the new constitution being devised by him. Sieyes soon found his speculations completely overmatched by Bonaparte's practical energy, and though a consul provisionally, he saw it desirable to terminate his political career. He retired with the title of count, and obtained grants of land and property to the value of at least $250,000. He was exiled at the restoration, but returned on the July revolution of 1830, and died in Paris, June 20, 1836.

Sigel, Franz, an American military officer; born in Sinsheim, Baden, Nov. 18, 1824. He came to the United States in 1852, and when the Civil War broke out, organized a regiment and went to the front, where he served with unusual distinction, being promoted Major-General. Subsequently he settled in New York city, where he entered politics; was made collector of internal revenue in May, 1871; register of the city in October, 1871, and pension agent in 1886; later was editor and publisher of the "New York Monthly." Died Aug. 21, 1902.

Sighing, a respiratory act, often prompted by mental impressions of conscious or unconscious kind, which is commenced by a prolonged effort of inspiration, in which the diaphragm descends. The expiratory act which follows, and which constitutes the "sigh," is caused by the recoil of the chest walls and lungs, and by the action of the abdominal muscles. Sighing, in short, illustrates simple respiration as modified by mental conditions.

Sigismund, Emperor of Germany and King of Hungary and Bohemia, second son of the Emperor Charles IV.; born in 1361. On the death of his father, in 1378, he became Margrave of Brandenburg. He married, in 1386, Maria, daughter of Ludwig Louis, King of Hungary, and was crowned king the same year. He soon after extended his dominions by the conquest of Wallachia. His queen dying in 1392, his claim to the crown of Hungary was contested by Ladislaus V., King of Poland, but unsuccessfully; and the frequent conspiracies formed against Sigismund by the nobles made him suspicious and cruel. In 1410 he was chosen emperor by one party of the electors, Jobst, Marquis of Moravia, being chosen by another party, and Wenceslaus, who had been deposed, still retaining the title of emperor. At the same period there were also three rival Popes.

But the death of Jobst and the acquiescence of Wenceslaus left Sigismund without a rival in the following year. He was crowned at Aix-la-Chapelle in November, 1414, and went thence to the great Council of Constance. The Bohemian reformer, John Huss, had come to Constance under a safe conduct of the emperor; but he was nevertheless burnt, as was also his disciple, Jerome of Prague. By the death of his brother, Wenceslaus, in 1419, he succeeded to the crown of Bohemia. In 1431, Sigismund was crowned King of Italy at Milan; and in 1433, Emperor of Rome by Eugenius IV. He died Dec. 9, 1437.

Sigismund III., surnamed De Vasa; born in 1566, was son of John II., King of Sweden, and of Catharine, the daughter of Sigismund I. He was elected King of Poland in 1587, and succeeded to the crown of Sweden in 1594. Being a Catholic, his uncle, Charles, Duke of Sudermania, easily undermined his authority in Sweden, and he lost that kingdom in 1604. In 1610 he succeeded in placing his son, Vladislaus, on the throne of Russia, but was afterward obliged to succumb. He died in Warsaw in 1632.

Sign, in astronomy, a portion of the ecliptic or zodiac, containing 30 degrees, or a 12th part of the complete circle. The first commences at the point of the equator through which the sun passes at the time of the vernal equinox; and they are counted onward, proceeding from W. to E., according to the annual course of the sun, all round the circle. The names of the 12 signs, in the order in which they follow each other, are as follows: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius Capricornus, Aquarius, Pisces.

Signal Corps, in the United States army, a body of men specially trained in the methods of conveying information. The means employed include the telephone, telegraph, balloons, sight and sound demonstrations, and other methods of transmitting intelligence with promptness and in the briefest possible time.

Signals, the means by which communications are made to greater distances than can be reached by the human voice. To the eye these are conveyed by flags, lights, etc., and to the ear by guns, steam-whistles, fog-horns, etc. The most complete systems of signaling are those devised to enable ships some distance apart to communicate with each other. Of these the most important ones in the United States navy are the international code, the secret naval code, the wig-wag system, the Ardois night signal code, and a system of wireless telegraphy invented by officers of the navy.

Signals, Railroad. At night colored lights are used, and during the day colored flags are displayed to convey information. Red always signifies danger and is a signal to stop. Green signifies caution, and is the signal to go slow. White signifies safety, and is the signal to go ahead. Blue is a signal seldom used, and is placed on a car or engine to forbid its being moved, as in the case of an accident.

Sometimes torpedoes are placed on the track when lights are not available. Torpedoes have the same meaning as red lights or flags. Colored fuses are also placed on the track, and have the same meaning as colored lights. Torpedoes and fuses are unseen and unheard by the passengers of a train. Lantern signals are the most common in use on all railroads, but are most generally used by freight crews.

Signature, in music, in writing music in any key with sharps or flats, the sharps and flats belonging to the key, instead of being prefixed to each note as required, are placed together immediately after the clef on the degrees of the staff to which they belong; and this collection of sharps or flats is called the signature. In printing, a letter or figure at the bottom of the first page of each sheet, to denote the order of the sheet and to facilitate the arrangement of them for binding.

Signboard, a board on which a man sets out his occupation or gives notice of articles for sale. Signboards were known to both Greeks and Romans. There are allusions to them in classic writers; and specimens have been found at Pompeii and Herculaneum, sometimes painted, but oftener carved.

Signet, a seal, especially the seal used for the seal manual of a sovereign.

Signorelli, Luca (called also, from his birthplace, Luca di Cortona), an Italian painter; born in Cortona, Italy, about 1441, and studied under Piero della Francesca at Arezzo. He began to distinguish himself about 1472, and painted till 1512, or perhaps later. He was the first to apply anatomical knowledge to painting, and thus became the precursor of Michael Angelo. His greatest works are a series of magnificent frescoes in the Cathedral of Orvieto. He died in Cortona, 1523.

Sigourney, Lydia (Huntley), an American author; born in Norwich, Conn., Sept. 1, 1791. In her "Letters of Life," published (1866) posthumously, she enumerates 46 distinct works wholly or partially from her pen, besides over 2,000 articles in prose and verse, contributed by her to nearly 300 periodicals. She died in Hartford, Conn., June 10, 1865.

Sigsbee, Charles Dwight, a American naval officer; born in Albany, N. Y., Jan. 16, 1845; was graduated at the United States Naval Academy in 1863; served in the Gulf blockading squadron during the latter part of the Civil War; and participated in the battle of Mobile Bay. After the war he commanded a Coast Survey vessel, and served for several years in the hydrographic office of the Navy Department at Washington. He invented a deep-sea sounding apparatus. As captain he was assigned to the command of the battleship "Maine" in 1897. He showed great coolness at the time of its destruction in Havana harbor, and the testimony before the Court of Inquiry proved that he had been extremely watchful and had maintained the most perfect order in all the appointments of the vessel and the strictest discipline on the part of the crew. During the Spanish-American War he commanded the auxiliary cruiser "St. Paul," which rendered excellent service as a naval scout. The deepest valley in the Gulf of Mexico is named "Sigsbee's Deep," after Captain Sigsbee, and the scientific name of Sigsbeia murrhina is given to one of the rarest species of deep-sea fauna. It was Sigsbee, too, who discovered near the Morro light, many beautiful specimens of the pentacrini, or sea lilies, and who, while in command of the "Blake," placed at the disposal of scientific investigators the first extensive collection of this ancient genus. Thus has Captain Sigsbee associated his name with the harbor of Havana both by scientific investigations and by exhibition of the highest qualities of command. In 1898 Captain Sigsbee was given command of the battleship "Texas," and in 1900 became chief of the bureau of naval intelligence.

Sikhs, a religious sect in Hindostan, which worships one only and invisible God. Its founder was Nanak Shah, born in 1469 in the province of Lahore. He labored to lead the people to a practical religion, to a pure worship of God and love to mankind. He died about 1540. Of his successors, Arjun-mal gave stability and unity to the religion by publishing Nanak's writings in the Adi-Granth

the first sacred book of the Sikhs. The real founder of the Sikh state was Govind Sinh or Singh, the 10th ruler from Nanak. He abolished the system of castes and gave all men equal rights. His followers received the title of Sinhs or lions. Govind Sinh wrote the Dasema Padshah ke Granth, or book of the 10th prince, which, besides treating of religious subjects, contained the history of the author's exploits. The Sikhs hold it in equal veneration with the Adi-Granth. Govind Sinh died in 1708, and the Sikhs gradually yielded to the superior power of the Mohammedans. A small number of the Sikhs escaped to inaccessible mountains, and preserved the doctrines of their fathers and an inextinguishable hatred toward the Mohammedans. After Nadir Shah's return to Persia they left the mountains and subdued all Lahore. The Sikhs then broke up into a number of independent communities, each governed by a sirdar; but in 1792 Runjeet Singh established himself as despotic ruler of the Sikhs, with the title of Maharajah. The territory of the Sikhs comprehended the whole Punjab, part of Multan, and most of the country between the Jumna and Sutlej; total area, 69,000 square miles After Runjeet Singh's death in 1839 a period of anarchy followed. A treaty was signed in 1846 by which Great Britain held the city of Lahore, and a British resident took supervision of the government. In 1848 a general revolt broke out, and in 1849 the Sikh dominion was proclaimed at an end, and the Punjab was annexed to the British empire in India.

Silene, in botany, the catchfly; many species are cultivated as ornamental plants in gardens.

Silenus, in mythology, a primitive woodland deity of Asia Minor, whom men try to catch when in a drunken sleep, in order to compel him to prophesy and sing.

Silhouette, a profile or outline representation of an object filled in with black. The first notice of the modern practice of the art was in regard to portraits made by Elizabeth Pyberg, who cut the profiles of the English sovereigns, William and Mary, out of black paper, 1699.

Silica, oxide of silicon. It enters largely into the composition of agate, chalcedony, flint, opal, sandstone, felspar, and a vast number of other minerals. In a perfectly pure state it is quite transparent and colorless. Its hardness is next to that of the precious stones. The industrial applications of silica are very numerous. Glass and pottery are compounds of silica with various metallic oxides. It is extensively used in metallurgical operations as a flux for effecting the decomposition of ores by the formation of a light glassy slag which floats on the top of the molten metal, carrying with it the impurities in the mineral.

Silicon, in chemistry, one of the non-metallic elements, the base of silica, discovered by Berzelius in 1823. It was at first supposed to be a metal, and received the name of silicium; but is now considered to be a non-metallic element. It is the most abundant solid element in nature.

COMMON SILKWORM.

a, larva, full grown; *b*, larva, scripositing; *c*, cocoon; *d*, chrysalis; *e*, female moth; *f*, male moth.

Silk, the peculiar glossy thread spun by the caterpillars or larvæ of species of moths, and a well-known kind of fabric manufactured from it.

In the manufacture of silk fabrics France has held, since 1750, the leading place in Europe, Lyons being the chief seat of the trade. The cultivation and production of silk was commenced in the United States at a very early period. In 1734 eight pounds of silk cocoons raised in Georgia were taken to England by Governor Oglethorpe. Later, a court dress was made for Queen Caroline of silk made from American cocoons. Nearly a century afterward the first silk made by machinery in the United States was manufactured at Mansfield, Conn. (1829). Silk cultivation is now a firmly established industry in California and several other States, and there are extensive silk manufactories at Paterson, N. J., Hartford and South Manchester, Conn., and other points in Massachusetts, Philadelphia, Baltimore, New York, etc. Sewing silks of American manufacture are regarded throughout the world as superior in many respects to those manufactured elsewhere. The same is also true of American-made dress silks and ribbons, which are rapidly crowding out those of foreign manufacture.

Sill, John Mahelm Berry, an American diplomatist; born in Black Rock, N. Y., Nov. 23, 1831; was graduated at the Michigan State Normal School in 1854; taught there as professor in 1854–1863 and as principal in 1886-1894; was twice principal of the Detroit public schools; member of the State Board of Regents of the University of Michigan in 1867-1870; and United States minister to Korea in 1894-1897. He died in Detroit, Mich., April 6, 1901.

Silliman, Benjamin, an American scientist; born in North Stratford, Conn., Aug. 8, 1779, was graduated at Yale College in 1796 and admitted to the bar in 1802. At the solicitation of President Dwight, of Yale, he abandoned law to devote himself to science, and in 1802 was chosen Professor of Chemistry and Natural History at Yale. In 1807 wrote the earliest authentic account of a fall of a meteor in America. In 1811 he began a series of experiments with the compound blow pipe and obtained for the first time in the United States the metals sodium and potassium. He discovered the fusion of the carbons in the voltaic arc in 1822; was one of the corporate members named by Congress for the formation of the National Academy of Sciences in 1863. In 1818 he founded the "American Journal of Science." He died in New Haven, Conn., Nov. 24, 1864.

Silliman Benjamin, an American chemist; son of the preceding; born in New Haven, Conn., Dec. 4, 1816; was graduated at Yale University in 1837, and immediately became an assistant to his father, then Professor of Chemistry at Yale. At the foundation of the Sheffield Scientific School at Yale, in 1847, he was made Professor of Chemistry in the School of Applied Chemistry; delivered the first series of lectures on agricultural chemistry ever given in the United States, and in 1869 became one of the State chemists of Connecticut. He was one of the original members of the National Academy of Sciences in 1863. He died in New Haven, Conn., Jan. 14, 1885.

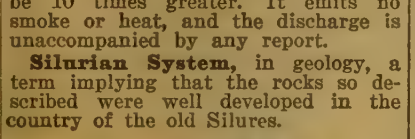
Silliman, Benjamin Douglas, an American lawyer; born in Newport, R. I., Sept. 14, 1805; was graduated at Yale University in 1824 and admitted to the bar in 1829. He began his political career as a member of the Assembly from Brooklyn, N. Y., in 1838, and three years later became prominent in Whig politics. He was appointed United States District Attorney for the Eastern District of New York in 1864; was a member of the convention which revised the New York State constitution in 1872; and was defeated as Republican candidate for attorney-general of New York in 1873. He died in Brooklyn, N. Y., Jan. 24, 1901.

Silliman, Reuben Daniel, an American lawyer; born in Hudson, Wis., May 17, 1871; was graduated at the law department of the University of Michigan in 1894; and admitted to the bar the same year. He practised law in Duluth, Minn., in 1894-1898, and in Honolulu in 1898-1899; was appointed judge of the Circuit Court of the 1st Circuit in the Hawaiian Islands, in March, 1900, by President Dole of the Republic of Hawaii; and to the same office by President McKinley, in June, 1900.

Siloam, or **Siloah,** a pool in Jerusalem, fed by the waters of the Gihon and forming part of the ancient water-supply system of the city. In 1880 the famous "Siloam inscription" was discovered in the aqueduct. It is the oldest Hebrew inscription known.

Silotvaar, an explosive, invented by the Russian engineer, Rucktchell, in 1886. As compared with ordinary gunpowder, its penetrating power, when used for cartridges, is stated to be 10 times greater. It emits no smoke or heat, and the discharge is unaccompanied by any report.

Silurian System, in geology, a term implying that the rocks so described were well developed in the country of the old Silures.



SILURUS.

Siluridæ, in zoölogy, a family of malecopterygious fishes, the type of which is the genus Silurus, comprising species of large size. The genus Pimelodus contains the cat fishes of the United States, of which there are about 30 species. The cat fish of the Great Lakes, is from two to four feet long, and attains the weight of 30 pounds.

Silvanus, in Roman mythology, a deity among the Romans, who had the care of fields and cattle and presided over boundaries. He was usually represented as old, and bearing a cypress plucked up by the roots; and the legend of Apollo and Cyparissus was transferred to him. The usual offering to Silvanus was milk.

Silvas, or **Selvas,** a name given to the immense wooded plains of the Central Amazon, the area of which is estimated at from 750,000 to 1,000,000 square miles. Being low, they are flooded for a fifth part of their extent by the annual rise of the Amazon and its tributaries. The moisture and heat of the climate combine with the richness of the soil to render the forests luxuriant in the extreme, the trees being matted together by innumerable climbing plants which form an impenetrable screen. Unspeakably gloomy in the rainy season, the silvas on its departure are brilliant with countless flowers.

Silver, a precious metal. It appears to have been known almost as early as gold, and, without doubt, for the same reason, because it occurs very frequently in a state of purity in the earth and requires but an ordinary heat for its fusion. Pure silver is of a fine white color. It is softer than copper but harder than gold.

Silver Age, the second mythological period in the history of the world, under the care of Jupiter. It succeeded the golden age and was characterized by voluptuousness. The phrase is also applied to a period of Roman literature succeeding the most brilliant period, and extending from about A. D. 14 to A. D. 180.

Silver Certificate, a certificate of deposit issued by the United States treasury for a certain number of silver dollars payable to the bearer on demand. It circulates as money.

Silver Fir, in botany, the Abies pectinata. It is named from its silvery-white bark; native of Central Europe, where it sometimes reaches 100 feet high.

Silver Fish, a fish of the size of a small carp, having a white color striped with silvery lines. It is a variety of the gold fish.

Silver Fox, in zoölogy, a variety of the Virginian fox. When adult, the fur is of a deep glossy black (whence it is also called the black fox), with a silvery grizzle on the forehead, and on the flanks passing upward to the rump. It is extremely rare, and the fur is very valuable.

Silvester I., Pope, elected in 314. The Arian heresy commenced in his pontificate, and he distinguished himself against the Donatists. Died 336.

Silvester II., was at first a monk in Auvergne, but withdrew from the monastery and went to Spain. The Duke of Barcelona took him to Italy where he was noticed by the Emperor Otho, who gave him an abbey, which

he afterward left; going to Germany he became preceptor to Otho III. He gained the papacy in 999, and died in 1003.

Simcoe, a lake in the province of Ontario, Canada. It is about 30 miles long, and 18 miles broad, situated between Lake Ontario and the arm of Lake Huron called Georgian Bay, into which it discharges its waters through Lake Gongichin and the Severn.

Simeon, in Scripture, the second son of Jacob and Leah; born about 1755 B. C. When he and his brethren went into Egypt to buy corn, his brother Joseph insisted on Benjamin, the youngest brother, being brought to him, and detained Simeon as a hostage for his forthcoming. He gave his name to one of the Twelve Tribes, which dwelt to the N. of the territory occupied by the tribe of Judah.

Simeon, Charles, an English preacher; was born in Reading, Berkshire, Sept. 24, 1759; was educated at Eton and King's College, Cambridge; took orders; and immediately after was appointed Perpetual Curate of Trinity Church, Cambridge, an office which he held till the close of his life, Nov. 13, 1836.

Simile, in rhetoric, a figure by which two things are considered with regard to a third that is common to both.

Simmons, Franklin, an American sculptor; born in Webster, Me., Jan. 11, 1839; first came into prominence in 1865-1866 when, at Washington, D. C., he produced several life-size bronze medallions of the members of the cabinet and prominent army and navy officers. In 1868 he went to Rome, Italy.

Simms, William Gilmore, an American author; born in Charleston, S. C., April 17, 1806. He died in Charleston, June 11, 1870.

Simon, Jules Francois, a French statesman; born in Lorient, Morbihan, Brittany, Dec. 27, 1814; was a disciple of Victor Cousin, the great French philosopher, and when 25 years of age succeeded him in the chair of philosophy at the Sorbonne. After the revolution in 1848 he was elected to the assembly from the Cotes-du-Nord. In March, 1849, he was elected to the Council of State In 1863 he was elected to the Corps Legislatif, where he served till the fall of the empire, when he was placed with Thiers and Gambetta at the head of the provisional government whose affairs he administered during the siege. From the conclusion of peace in 1871 till the fall of Thiers he was prominent in the Assembly at Bordeaux and at Versailles, and in 1875 was elected a life senator. He died in Paris, France, June 8, 1896.

Simonides, a Greek lyric poet born in the island of Ceos, 556 B. C. He lived at Athens during the reign of Hipparchus and spent his last years at the court of Hieron of Syracuse. Only fragments of his poems are extant. Simonides made poetry his profession, and is said to have been the first poet who wrote for pay. He died 467 B. C.

Simon, Richard, the father of Biblical criticism; born in Dieppe, France, May 13, 1638. He entered the Congregation of the Oratory in 1659, but soon after withdrew, to return in the latter part of 1662. He was sent first to lecture on philosophy in the college of Juilly, but was afterward appointed to catalogue the Oriental MSS. in the library of the Order of Paris. The scandal occasioned by the appearance of his "Critical History of the Old Testament" led to his again withdrawing from the Oratory and retiring to Belleville as curé. In 1682 he resigned his parish and lived in retirement. Died in Dieppe, April 11, 1712.

Simons, Frederic William, an American geologist; born in Charlestown, Mass., July 3, 1853; was graduated at Cornell University in 1875; was instructor of Geology and Paleontology there in 1875-1877. He held the professorship of botany, geology, and zoölogy at the University of North Carolina 1877-1881; and that of geology and biology at the University of Arkansas in 1887-1890; and accepted the chair of geology at the University of Texas in 1895.

Simonton, Charles H., an American jurist; born in Charleston, S. C., July 11, 1829; was graduated at the South Carolina College at the head of his class. He then studied law and

practised in his native city; was a member of the Legislature of South Carolina in 1858–1886, excepting the periods of the Civil War and reconstruction. He joined the Confederate army in 1861; was captain of the Washington Light Infantry, and afterward colonel of the 25th South Carolina Volunteers. During the latter months of the war he was a prisoner at Fort Delaware. In 1886–1893 he was United States district judge of the District of South Carolina.

Simony (so called from its resemblance to the sin of Simon Magus) in English law, an offense consisting in the presentation to an ecclesiastical benefice for a reward.

Simoom, a noxious hot wind which occurs in most countries situated at no great distance from sandy deserts, and which always blows from that quarter in which the desert is situated. The approach of the simoom is indicated by terrible appearances. The E. horizon is pervaded by a dull yellow hue; a thick sulphurous exhalation rises from the ground, which is first hurried round in rapid gyrations, and then ascends into the air covering the whole heavens. Hissing and crackling sounds are heard; and a hot current of air rushes over the ground. There is generally a considerable quantity of fine sand in the hot air, and the wind affects the human body very powerfully, often producing great feebleness and sometimes even death.

Simplon Tunnel, a tunnel through the Alps, designed to give France and Switzerland direct communication by rail with Milan, the greatest distributing point in Italian trade. Among Italians it is believed that the tunnel will double the commerce of Genoa and make that city, instead of Marseilles, the first among the Mediterranean ports. Work was begun on the tunnel on Nov. 13, 1898. It will be the longest tunnel in the world, 12¼ miles. When completed, it will be the third one connecting Italy with outlying countries by direct rail. The Simplon tunnel begins in Switzerland near the little town of Brig, in the valley of the Rhone, Canton Wallis, and ends in the valley of the Diveria, on the Italian side near Isella. It will be perfectly straight, except for a small curve at the ingress and egress. It is to be completed in 5½ years, and the contract provides for a fine of 5,000 francs ($965) per day if the time limit is exceeded, while a gratuity of the same amount per day is to be given if it is finished before the stipulated period.

Simpson, Edward, an American naval officer; born in New York city, March 3, 1824; took part in the Mexican and Civil Wars; and became a rear-admiral in 1884. He died in Washington, D. C., March 2, 1888.

Simpson, Sir James Young, a British physician; born in Bathgate, Linlithgowshire, June 7, 1811. At the age of 15 he proceeded to Edinburgh University, and in 1830 was licensed by the Royal College of Surgeons. In 1832 he graduated as M. D., and became assistant to Professor John Thomson. He was shortly afterward elected one of the presidents of the Royal Medical Society, and in 1835 he published a paper on diseases of the placenta, which was translated into different European languages. In 1839 he was appointed to the chair of midwifery in the University of Edinburgh. His first paper on chloroform was read before the Medico-Chirurgical Society of Edinburgh on March 10, 1847, and it soon came into general use. He died in Edinburgh, May 6, 1870.

Simpson, Matthew, an American clergyman; born in Cadiz, O., June 20, 1810; tutor in Madison (now Allegheny) College in his 19th year; was graduated in medicine in 1833, and soon after entered the ministry in Pittsburg Conference (M. E.); elected vice-president and professor in Allegheny College, 1837; elected president of Indiana Asbury University, 1839; elected editor of the "Western Christian Advocate" 1848. In 1852 he was elected bishop. During the Civil War he delivered numerous addresses in behalf of the Union and the freedmen, and officiated at the funeral of President Lincoln. In 1874 he visited Mexico, and later presided at the conferences in Europe; and in 1881 visited Europe for the third time as delegate to the first Methodist Ecumenical Council and de-

livered the opening address. He died in Philadelphia, Pa., June 18, 1884.

Simpson College, a coeducational institution in Indianola, Ia.; founded in 1867 under the auspices of the Methodist Episcopal Church.

Simrock, Karl Joseph, a German poet; born in Bonn, Germany, Aug. 28, 1802. He studied at the university of his native city and at Berlin, and in 1826 entered the Prussian State service. In 1850 he was appointed Professor of Old German Language and Literature at Bonn, a post which he held till his death, July 18, 1876.

Sims, James Marion, an American surgeon; born in Lancaster, S. C., Jan. 25, 1813; studied medicine at Charleston and Philadelphia, and having begun practice had his attention specially drawn to some of the special diseases of women, for which he gained a distinguished name, introducing new instruments and operations. He was instrumental in getting a woman's hospital established in New York. Practised for some years in Europe. He died in New York city, Nov. 13, 1883.

Sims, Winfield Scott, an American inventor; born in New York city, April 6, 1844; was graduated at the Newark (N. J.) High School in 1861, and served during the Civil War in the 37th New Jersey regiment. Subsequently he turned his attention to the investigation of electric apparatus; constructed an electric motor by means of which he was enabled to propel a 16-foot boat at the rate of 4 miles an hour; was the first to apply electricity to the propulsion and guidance of movable torpedoes, and later devised a dynamite boat with a speed of 18 miles an hour, to be used in the harbor and coast defense service.

Simson, Robert, a Scotch mathematician; born in Kerton Hall, Ayrshire, Oct. 14, 1687; was educated at the University of Glasgow. In 1711 he was appointed Professor of Mathematics in Glasgow, and he occupied this chair for half a century. One of the first subjects to which he turned his attention was the restoration of Euclid's lost treatise on "Porisms." It is Simson's greatest achievement that he elucidated the nature of the ancient porisms, though his restoration of them is not complete. He died Oct. 1, 1768.

Simultaneous Equations, in mathematics, two equations are simultaneous when the value of the unknown quantities which enter them are the same in both at the same time.

Sin, a condition that is not simply moral evil as recognized by the awakened human conscience, but guilt before God.

Sinai, a mountain, or mountain range. in Arabia Petræa, in the peninsula formed by the two arms of the Red Sea, and rendered memorable as the spot where, according to the Pentateuch, the law was given to Israel through Moses. This mountain range is divisible into three groups: a N. W., reaching, in Mount Serbal, an elevation of 6,340 feet; an E. and central, attaining, in Jebel Katherin, a height of 8,160 feet; and a S. E., whose highest peak, Um Shaumer, is the culminating point of the whole Sinaitic range.

Sinecure, in common language, an office which has revenue without employment.

Si-ngan-foo, the capital of the province of Shen-si, in Northwestern China. It was long the capital of the empire, and is still of strategic and commercial importance. Silk, tea and sugar are the principal articles of commerce. Pop. estimated at about 1,000,000.

Singapore, the capital of the dependency of the same name, is the only town on the island. It is a picturesque, well-built town, with fine public buildings and all kinds of appliances in the nature of public works. It possesses a governor's residence, St. Andrew's Protestant cathedral, Roman Catholic cathedral, Mohammedan mosques, Hindu temples, Chinese joss-houses, Raffles museum, the supreme law-courts, postoffice, hospitals, jail, barracks, and fine botanical and zoölogical gardens. It is defended by numerous batteries and forts, and is a naval coaling station and depot. The docks, stores, and dwelling houses extend for 6 miles or more along the sea front. The harbor is spacious and safe and remark

ably easy of access. The death rate is high, yet the climate, in spite of Singapore being situated little more than 1° N. of the equator, is uniform and agreeable, the nights being particularly cool and refreshing. The thermometer ranges between 67° and 94° F. The rainfall varies from 65.6 to 92.2 inches in the year. It was made the capital of the Straits Settlements in 1830, superseding Penang. Pop. 160,000.

Singing, the production of music by the human voice. The principal requisites in singing are a good voice, a correct ear, and a sound rudimentary knowledge of music. By careful practice, purity of tone and flexibility of execution may be attained, and the sweetness, brilliancy, and compass of the voice increased in a marked degree.

Single Standard, a phrase used in the discussion of bimetallism to indicate a single standard of value; that is, gold alone or silver alone.

Single Tax, the principle held by Henry George and his followers, that the value which the growth and improvement of the community attaches to land should be taken for the use of the community, so that no tax need be levied on the product of labor, but all public revenues for national, state, county, and municipal purposes could be raised by a single tax on land values, irrespective of improvement. The originator urged the adoption of his theory on two grounds, "governmental expediency" and "social justice."

Sinister, in heraldry, a term which denotes the left side of the escutcheon.

Sinking Fund, a fund set aside, from various sources of revenue, by a government, State, or company, for the gradual extinction or amortization of its debt.

Sin Offering, in Judaism, the Hebrew chhattath, a sacrifice for the removal of sin, first instituted in Lev. iv.

Sinon, the Greek who, according to the legend, threw himself into the hands of the Trojans and persuaded them to admit the wooden horse.

Sinople, red ferruginous quartz, of a blood or brownish red color, sometimes with a tinge of yellow. It occurs in small very perfect crystals, and in masses resembling some varieties of jasper.

Sinus, in anatomy, a term for the air cavities contained in the interior of certain bones — as the frontal, ethmoid, sphenoid, temporal, and superior maxillary.

Sioux, or **Dacotah, Indians,** a once powerful family of North American Indians. Their number is estimated at 25,000; they are well advanced in civilization and are increasing in population. In 1862, the Sioux under the lead of Little Crow, a noted chief, in consequence of the annuity not having been paid to their satisfaction, waged a war on the whites of Minnesota; and so well concerted were their schemes that no less than 640 men, women, and children, and 94 soldiers, were killed before the massacre was stayed. They are now divided into small branches, and located on several reservations, chiefly in North and South Dakota and Minnesota.

Siphon, a curved tube having one branch longer than the other; used for transferring liquids from higher to lower levels. It acts by atmospheric pressure, and consequently cannot be depended on for overcoming heights greater than about 30 feet near the level of the sea, and a less height at greater elevations.

Siphonia, a genus of plants, order Euphorbiaceæ, called seringa trees by the Brazilians, from the Portuguese word seringa, signifying a syringe or clyster pipe, the caoutchouc having first been used for making those articles. The bulk of the caoutchouc at present exported from Para is obtained from S. Brasiliensis, which is common in the forests of that province; but that brought down to Para from the Upper Amazon and Rio Negro is derived from S. lutea and S. brevifolia. These three species are all slender, smooth-stemmed trees, averaging 100 feet in height; the Para species, however, yields the greatest abundance of caoutchouc.

Sir, a term of complimentary address applied commonly, without regard to position or standing, to men of any degree; a general title by

which a person addresses the man to whom he is speaking.

Siren, in acoustics, an instrument for determining the number of vibrations corresponding to a note of any given pitch.

In classical mythology, certain melodious divinities who dwelt on the shores of Sicily and so charmed passing mariners by the sweetness of their song that they forgot their homes and remained there till they perished of hunger. According to one legend they threw themselves into the sea, from rage and despair, on hearing the more melodious song of Orpheus. Originally there were only two sirens; but their number was afterward increased to three, and their names are given with great variety.

In zoölogy, mud eels: a genus of Urodela or of Perennibranchiate Ichthyoidea, constituting the family Sirenidæ. They are eel-like amphibians, with two anterior feet and permanent branchiæ, and range from Texas to Carolina. There are three species. S. lacertina is the mud eel.

Sirenia, an order of aquatic Mammalia, including the manatee, dugong, rytina, etc.; allied to the Cetacea, with which they were formerly and are still occasionally classed. The body is long, compact, and cylindrical, narrowing toward the tail, which is set horizontally and terminates either in forked flukes or a flat fibrous expansion. Hind limbs and sacrum absent; anterior limbs converted into paddles. Snout fleshy and well developed; nostrils on upper surface; lips fleshy, the upper lip usually with a moustache. The skin is rough and sparsely hairy, or smooth like that of the whale. The sirenia pass their life in the water, living chiefly in shallow bays, estuaries, lagoons, and rivers, never straying far from shore, and feeding solely on aquatic vegetation.

Sirex, in entomology, the typical tailed wasp. It is, however, an aberrant sawfly, the apparent sting being a projecting ovipositor. It is not uncommon in pine and fir woods.

Sirius, in astronomy, the dog star, by far the brightest fixed star in the sky. It is alpha Canis Major, situated a little below Orion, and is mythologically regarded as one of the hounds held in leash by Orion, Procyon in Canis Minor being the other. Ptolemy, in the 2d century, ranked Sirius among red stars; now it is white, and is a very brilliant object, its light being 324 times as great as that of a star of the sixth magnitude. It is about 1,000,000 times as far from us as the sun, and its mass is about 20 times as great. Some irregular movements of Sirius led to the belief that a heavenly body existed near enough to produce a perturbation, and a son of Alvan Clark, of Boston, discovered, on Jan. 31, 1862, what appears to be a planet revolving around Sirius as its sun, it is thought in about 49 years.

Sirocco, a hot wind storm. Most of the hot winds of the Old World are modified forms of the simoom. The sirocco originates in the Sahara and travels N. to the Mediterranean and Southern Europe, but it is not so deadly as the prototype. It brings with it great quantities of the desert sand, and the air becomes so dense at times that the sun is obscured as if by fog. While it remains on the African mainland it is characterized by a very marked dryness, as there are no extensive water surfaces to supply it with moisture. As soon, however, as it is launched over the Mediterranean it begins to take up copious draughts, so that when it reaches Malta, Sicily, and the S. shores of Europe as a wind from between S. E. and S. W., it has undergone a change from a hot, dry wind to a hot, damp wind. During its prevalence iron rusts, clothes spoil with mildew, meat turns putrid, grapes and green leaves wither, wine will not fine, and paint will not dry. Sicily experiences the sirocco about a dozen times a year, but it is not so frequently met with in other parts of Europe.

Sisal, or Grass Hemp, a species of agave yielding a valuable fiber, a native of Mexico, Honduras, Central America, and specially cultivated in Yucatan. It is grown on stony ground, and the leaves, from which the fiber is prepared, are from two to three feet long. The pulp is cleaned away from each side of the leaf and the remaining fiber is then washed and sun-dried.

Siskin, the American pinefinch, an autumnal visitant from the N. to temperate regions, generally leaving in the spring, though many pairs remain and breed. Breeders often pair the siskin with the canary to obtain a song bird whose note is less shrill than that of the pure canary.

Sisyrinclum, small grass-like plants, the most common being the blue-eyed grass, a little plant with blue flowers found in the United States and Canada.

Sisterhoods, societies or communities of women living together under a religious rule, binding upon all, and with a common object for their united life. But in common use the word denotes those communities which are not enclosed.

Sitka, or **New Archangel,** a port of entry and seat of administration of Alaska Territory; on the W. coast of the island of Sitka or Baranof; about 1,300 miles N. of San Francisco. It is located amid beautiful scenery, and has a wide and deep harbor, somewhat difficult of entrance. Its bay, dotted with evergreen islands, opens out into the Pacific, and within view are river, forests, and snow-covered mountains. Ferns and mosses are found in great variety. It is said that on the small island of Sitka there grow more than 300 kinds of wild flowers. The town contains a hospital, museum, an industrial and public school, the Greek Church of St. Michael, built in 1816, and in which the Russians still maintain the national religion, and a Presbyterian mission where about 200 boys and girls receive an industrial training in connection with the ordinary branches of an English education. When Alaska was transferred to the United States in 1867, Sitka contained only about 100 log huts. Pop. (1900) est. 2,000.

Sitting Bull, a chief of the Sioux Indians; born about 1837; was regarded as a great "medicine man" by his tribe; and was an obdurate foe of the whites. He was conspicuous in the Sioux massacre of 1862; was constantly on the war path for 14 years; was a leader in the Indian outbreaks of 1876; and was in command at the battle of the Little Big Horn in which General Custer and his entire force were killed. With his band he escaped into Canada, but continued even there to incite rebellion among the Sioux. In 1880, receiving the promise of pardon, he returned to Dakota and surrendered to General Miles. He again incited the Indians to renewed outbreaks. His arrest was ordered and the Indian police were detailed on this duty. In attempting to resist them, he was killed Dec. 15, 1890.

Sium, in botany, the water parsnip; a genus of Umbelliferæ, family Amminidæ; poisonous herbs with small white flowers.

Siva (a Sanskrit word, literally meaning "happy," "auspicious"), the name of the third god of the Hindu Trimurti or triad, in which he represents the characters both of Destroyer and Reproducer. The name Siva, as that of a deity, is unknown in the Vedic hymns, but established as such in the epic poems, Puranas and Tantras. The Saivas, or worshipers of Siva, assign to him the first place in the Trimurti; and to them he is not only the chief deity, but the deity which comprises in itself all other deities. The symbol of Siva is the Linga, emblematic of creation, which follows destruction. From each of his numerous attributes or characteristics he derives a name or epithet. He has five heads (hence his name Panchanana, "the five-faced"); three eyes (hence his name, Trincetra, "three-eyed"), one of which is on his forehead, and indicates his power of contemplation; and in the middle of his forhead he wears a crescent. His hair is clotted together and brought over the head so as to project like a horn from the forehead. On his head he carries the Ganges, whose course he intercepted by his hair, when this river descended from heaven, so as to enable the earth to bear its fall. Round his neck he carries a garland of human skulls. In his hands he holds the trident, a club or pole armed at the upper end with transverse pieces representing the breastbone and ribs adjoining, and surmounted by a skull and one or two human heads.

Sivalik Strata, in geology, certain fresh-water strata found in the Sivalik Hills in Sirmoor, etc. They were originally regarded as Miocene.

Six Companies, an organization of Chinamen with headquarters in San Francisco, Cal., partly benevolent and partly commercial. Originally, they guaranteed to send back, dead or alive, the body of every Chinaman who sailed from home to this country, but they now ship back to China the bones only of those whose families desire those relics buried in the sacred earth of the Flowery Kingdom. They began in 1850 and 1851 hiring men in China to meet the demand for labor in California. The business grew and other Chinese firms went into it. Then the agents of all these firms found it necessary to unite for self-protection. There were six of these agencies, and they called themselves the Six Companies. They are secret societies only to the initiated; to the rest they do not differ widely in their main design from the societies which white men established in California during the gold fever, when people from every State in the Union had their headquarters there. The Six Companies have added arbitration bureaus and banking operations to their original scheme.

Six-principle Baptists, an American sect of Baptists, claiming descent from the original settlement of Roger Williams at Providence, R. I., in 1630. The six principles from which they derive their name, are repentance for dead works, faith toward God, the doctrine of baptism, laying on of hands, resurrection of the dead, and eternal judgment.

Sixtus, the name of several popes:

Sixtus I., successor of Alexander I. in 119; martyred in 127.

Sixtus II., the successor of Stephen I. He is stated to have been an Athenian and pagan philosopher before his conversion to Christianity. He was one of those who suffered martyrdom in the persecution of the Christians by Valerianus in 258.

Sixtus III., successor of Celestin I. in 432. He endeavored to reconcile the disputes existing in the Eastern Church, particularly in the case of Cyril, Bishop of Alexandria, and John of Antioch. He was also a munificent patron of learning, and is stated to have left 5,000 silver marks to be expended in the embellishment of ecclesiastical structures. He died in 440.

Sixtus IV.; born in Savona, July 22, 1414; was the son of a fisherman on the coast of Genoa, but became a monk of the order of Cordeliers. He became general of his order, and was honored with the cardinalship by Paul II., whom he succeeded in 1471. He died Aug. 13, 1484.

Sixtus V., (Felice Peretti), Pope; born near Montalto, Dec. 13, 1521. He entered the convent of the Cordeliers at Ascoli. Pius V., who had been his pupil, had him chosen general of the Cordeliers, named him his confessor, and, in 1570, created him cardinal. He was not in favor with Gregory XIII., and it is said that in his retirement he feigned great feebleness, walked leaning on a stick, his head declined, and his voice broken. These signs of old age vanished with surprising suddenness the moment of his election as successor to Gregory in April, 1585. He threw away his staff, lifted up his head, and made the place ring with his loud Te Deum. His first care was to repress brigandage, and make Rome and the States of the Church safe from the violence which had long prevailed. Before the end of 1585 Sixtus published a bull of excommunication against Henry of Navarre and the Prince of Conde. During the five years of his pontificate Sixtus formed and executed many designs for the improvement and adornment of Rome; completed a great aqueduct for the supply of Rome with water; rebuilt the library of the Vatican, and established the celebrated printing office in connection with it; had new editions of the "Septuagint" and the "Vulgate" published at his own expense, and yet left the treasury rich. Sixtus fixed the number of cardinals at 70. He died in Rome, Aug. 27, 1590.

Size, a kind of glue or adhesive varnish used in many industrial pursuits.

Skager Rack, a broad arm of the German Ocean, which washes Norway on the N., Jutland on the S., and Sweden on the E., where it communicates with the Cattegat; length, W. S. W. to E. N. E., about 150 miles; breadth, 80 miles. Its depth varies from 30 to upward of 200 fathoms.

Skaguay, a town on Chilkat Inlet, Alaska; at the head of Lynn canal,

and at the entrance to the White Pass. It is a result of expeditions to the Yukon gold fields in 1897, when the White Pass began to be used as a means of reaching the Klondike and its vicinity. In 1899 the first college in Alaska was opened here. Skaguay is a miner's town, and a landing place for steamers. Its name is derived from the Indian name of a river which flows into the sea near the town.

Skate, in ichthyology, the popular name of any individual of a section of

COMMON SKATE.

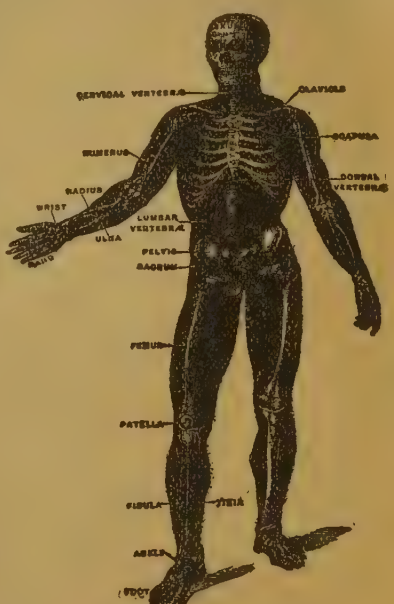
the genus Raia, differing from the rays proper in having a long pointed snout.

Skating, progression on ice accomplished by means of instruments composed of steel blades which are fastened to the soles of the boot, and which are called skates.

Skeleton, a general term for the more or less hard parts of animals, whether forming an internal supporting framework — an endoskeleton, or an external exoskeleton, often useful as armor. The term includes many differents kinds of structure and material.

Skene, William Forbes, a Scotch historian; born in Inverie, in Kincardineshire, June 7, 1809. He was educated at Edinburgh High School; in Germany; and at the universities of St. Andrews and Edinburgh, afterward in 1831 becoming a writer to the Signet in Edinburgh. In 1881 he succeeded Hill Burton as historiographer for Scotland. He died Aug. 29, 1892.

Skerrett, Joseph Salathiel, an American naval officer; born in Chillicothe, O., Jan. 18, 1833; was appointed to the United States navy in 1848 and later assigned to duty with the



HUMAN SKELETON.

African squadron engaged in the extermination of the slave trade. His principal service during the Civil War was in June, 1864, when, as commander of the gunboat "Aroostook," he successfully attacked the Confederate fortifications at the mouth of the Brazos river, Texas. Subsequently he commanded the apprentice ship "Portsmouth"; was on duty at the Naval Academy, and when at Honolulu prevented the outbreak of the threatened revolution of 1873. While commanding the "Richmond," of the

Asiatic station, in 1881–1884, he visited Apia, Samoa, where he settled the trouble in which the United States consul had become involved. In 1884–1886 he was at the Naval Asylum in Philadelphia; in 1892–1893 was commander of the Pacific station; and in 1893 became commander of the Asiatic squadron. He died in Washington, D. C., Dec. 31, 1896.

Skerryvore Lighthouse, a lighthouse built on a rock forming part of an extensive reef lying about 12 miles S. W. from the wild Isle of Tyree on the W. coast of Scotland.

Skew Bridge, in engineering, a bridge in which the passages under and over the arch intersect each other obliquely.

Ski, large snow-shoes worn in Norway and other extreme N. countries. They are light in their construction and are about eight feet long. Without these it would be impossible for the peasants to get about during the months of deep snow, when ordinary walking is impossible. The children wear them and acquire great proficiency in their use, and every village has its competition for speed, style, and leaping. On the first Sunday in February, when the snow is usually at its best condition, an annual "ski" competition is held at Holmenkollen and famous races and "jumps" are made. A leap of 120 feet has been recorded. The ski has become popular in Canada and in some parts of the United States, especially in the Northwestern States, where there is a large Scandinavian population. Here "ski running" has become a prominent feature of winter sport.

There have been a number of ski tournaments in Minnesota, and the number of ski runners in the United States has increased to an extent that has warranted the organization of a National Ski Association.

Skiascope, an apparatus for making observations of the influence of the Roentgen rays on a fluorescent screen.

Skid, or **Skeed,** an iron shoe or socket for checking the speed of a carriage when going down hill; it is attached to the carriage by a chain of such length as will permit the wheel to ride on it instead of revolving. In the United States, a lengthy square piece of timber along which something is rolled or by which it is supported. In nautical language, any beam or timber used as a support for some heavy body, to prevent its weight falling on a weak part of the vessel's structure. Also timbers that are laid crosswise in a ship's waist, to sustain the larger boats, the launch in particular.

Skimmer, or **Scissors Bill** (Rhynchops), a genus of long-winged sea birds belonging to the gull family (Laridæ). Their most distinctive feature is the long, thin bill with the lower half longer than the upper. There are only three known species, occurring in America, Asia, and Africa. Darwin describes the American skimmers, or, as they are also called, shear-waters, as skimming along the surface of the water, generally in small flocks, ploughing up small fish with their projecting lower mandible, and securing them with the upper half of their scissors-like bills.

Skin, that membrane of variable thickness which covers the whole body externally and extends inward into all the natural openings, where it changes its properties, becoming soft and moist, and hence known as mucous membrane. The skin is generally described as composed of three layers: the cuticle, the rete mucosum, and the cutis vera, the last being the most internal. The cutis (dermis), or true skin, consists of two layers, of which the deeper is called the corium, and the more superficial, the papillary layer. The corium is composed of numerous fibers closely interlaced, and forming a smooth surface for the support of the papillary layer. It varies in thickness, being, as a general rule, thick on the exposed parts and thin on the protected. The papillary layer is soft, and formed by numerous papillæ which cover its whole surface. It contains the expansions of the sensitive nerves. The rete mucosum (mucous network) lies immediately over the cutis, and in some measure diminishes the inequalities of its surface, being thicker between the papillæ and thinner on their summit. It is composed of minute, uncleated cells, and is almost pulpy in consistence. It is very slightly developed in the white races, but is very distinct and thick

in those that are darker, the cells, which are filled with a pigment, being that which gives the dark color to their skin. The cuticle, scarfskin, or epidermis is a disorganized scaly substance, serving to protect from injury the more delicate cutis. It is thickest on the most exposed parts; and on the palms of the hands and soles of the feet it consists of several layers. The skin performs various important functions. It is the seat of common sensation, and is furnished with numerous pores or openings which give passage to the sweat and other exhalations. It is in this way the great regulator of the heat of the body.

Skin Grafting, in surgery, a method for the treatment of large ulcerated surfaces by the transplantation of small pieces of skin from another part of the body, or from the body of another person.

Skink, or **Scink,** in zoölogy, the popular name for Scincus officinalis, or any individual of the family Scincidæ, considered by some naturalists as forming a connecting link between the lizards and the serpents, since it contains individuals which are lacertiform, others having rudimentary limbs, and others again serpentiform in appearance, the external limbs being entirely absent.

Skinner, William, an American manufacturer; born in London, England, in 1824; came to the United States in 1845 and engaged in the silk business in Northampton, Mass. In 1848 he became a partner in a silk manufacturing firm, and in 1851 started a factory of his own in Williamsburg, Mass., which was entirely destroyed in the great Mill river flood in 1874. In the same year he started again in Holyoke. He died in Holyoke, Mass., Feb. 28, 1902.

Skipper, in zoölogy, the common name of the lepidopterous insects composing the family Hesperidæ. Skippers fly with a jerking motion, and hence their name. They are generally of a rich brown, marked with yellow spots.

Skirmish, a slight fight in war, between small parties and less than a battle; a loose, desultory kind of engagement in presence of two armies, between small detachments sent out for the purpose either of drawing on a battle or of concealing by their fire the movements of the troops in the rear.

Skirmishers, dispersed soldiers in the first line of battle. They act in front of battalions or masses of soldiers so as to cover the advance of an army and prevent surprises. During recent years the scope of skirmishes has been widely extended in the important modifications of military science represented by the Prussian "swarm" and the British "advance in loose order."

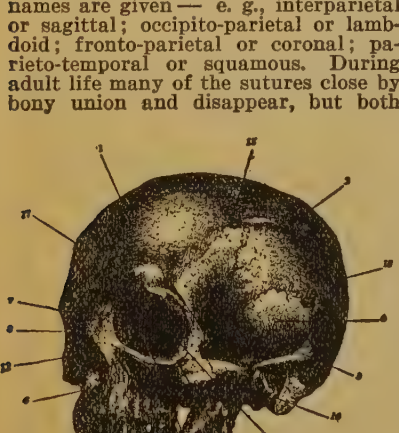
Skirret, the Sium Sisarum, a perennial plant of the natural order Umbelliferæ, a native of China and Japan, but which has long been cultivated in gardens in Europe for the sake of its roots, which are tuberous and clustered, sometimes six inches long, and of the thickness of the finger. They are sweet, succulent, and nutritious, with a somewhat aromatic flavor, and when boiled are a very agreeable article of food.

Skittles, an English game resembling bowling in which nine wooden pins are set up on a frame at the end of a short court or alley, the object of the players being to knock over all the pins in as few throws as possible with the skittle ball.

Skua, in ornithology, the popular name of a species of gull. They are predatory swimming birds, rarely fishing for themselves, and generally pursuing smaller gulls and terns, and compelling them to drop or disgorge their prey. Four species visit the temperate regions of America and Europe.

Skull. The skeleton of the head of a vertebrate animal; it is divided into two parts, the cranium and the face. In human anatomy it is customary to describe the former as consisting of eight and the latter 14 bones; the eight cranial bones, which constitute the brain case, being the occipital, two parietal, frontal, two temporal sphenoid and ethmoid; while the 14 facial bones, which surround the cavities of the mouth and nose and complete the orbits or cavities for the eyes, are the two nasal, two superior maxillary, two lachrymal, two malar, two palate, two inferior turbinated, vomer, and inferior maxillary. The bones of the ear, the teeth, and the Wormian bones are

not included in this enumeration. The lower jaw articulates with the temporal bones by means of a diarthrodia joint, but all the others are joined by sutures. On the base of the cranium the occipital and sphenoid bones articulate by means of a plate of cartilage (synchondrosis) in young subjects; in adults this becomes bony union. Sutures are named from the bones between which they are found, but to those around the parietal bones special names are given — e. g., interparietal or sagittal; occipito-parietal or lambdoid; fronto-parietal or coronal; parieto-temporal or squamous. During adult life many of the sutures close by bony union and disappear, but both



HUMAN SKULL, SIDE VIEW.

1, frontal bone; 2, parietal bone; 3, sphenoid bone; 4, temporal bone; 5, process of the cheek bone; 6, superior maxilla; 7, nasal bone; 8, lachrymal bone; 9, ethmoid bone; 10, inferior maxilla; 11, chin; 12, anterior nasal aperture; 13 optic foramen; 14, mastoid process of the temporal bone; 15, coronal suture; 16, squamous suture; 17, superior ledge of the eye-orbit.

the age at which this occurs and the order of its occurrence are subject to variation. Wormian bones are irregular ossifications found in relation to the sutures of cranial bones, but seldom seen in relation to the bones of the face. They are most frequent in relation to the lambdoid suture, and seldom one inch in diameter. The closure of a suture stops the growth of the skull along that line, and in order to compensate for this defect an increase of growth may occur at right angles to the close suture and thus irregularities of form may result. Irregular forms may be produced artificially by pressure applied early in life. This is best seen among certain American tribes who compress their children's heads by means of boards and bandages. The bones of the skull are pierced by holes (foramina), and similar holes are found in relation to the adjacent margins of bones. Most of these foramina are situated in the base or floor of the skull, and are for the ingress of arteries and the exit of veins in cranial nerves. The largest of these foramina — the foramen magnum — is found in the occipital bone. It is situated immediately above the ring of the atlas vertebra, and through it the continuity between the brain and spinal cord is established, and further, it transmits the vertebral arteries which supply blood to the brain. Compared with the skulls of animals, the form of the human skull is modified (1) by the proportionately large size of the brain and the consequent expansion of the bones which surround it; (2) by the smaller size of the face, especially of the jaws, so that the face of man, instead of projecting in front of, is under the forepart of the cranium; (3) by the erect attitude, which places the base of the skull at a considerable angle with the vertebral column, and, in consequence of a development backward from its point of articulation with the vertebræ, the skull is nearly balanced on the summit of the vertebral column. Hence the orbits look forward and the nostrils look downward. The development of the skull is a subject of great interest, not only in itself, but as throwing light on many points which the study of the adult skull would fail to explain.

The fact that concussion of the brain scarcely ever proves fatal, unless there is also fracture of the skull, affords the most distinct evidence that the skull is constructed in such a manner that so long as it maintains its integrity it is able to protect its contents from serious lesion. This mar-

velous protective power is due to its rounded shape, whereby its strength s increased, and in consequence of vhich blows tend to glide off it without doing material damage. Moreover, the curved lines or ridges which nay be traced round the skull tend to trengthen it. The weakest part of the kull is at the base. Hence, notwithtanding its removal from exposure to lirect injury and the protection afford-d by the soft parts, fracture takes lace more frequently at the base than t any other part of the skull, fracure often taking place here even vhen the skull was not broken at the art struck. There are two points in he architecture of the bones of the ace which deserve special notice — iz. (1) the great strength of the asal arch; and (2) the immobility f the upper jaw, which is fixed by hree buttresses — the nasal, the zygonatic, and the pterygoid.

Skunk, the Mephitis, a genus of mall carnivorous quadrupeds of the veasel family. All the species are American, and, as they differ little in abit, the common skunk may be taken s typical of the whole genus. It is n animal about the size of a cat; as fur of a glossy black; on the forehead is a patch of white diverging into wo lines which extend the whole ength of the back and meet again in he beautiful bushy tail. The under surface of the tail is also white, and is usually carried erect or laid over gainst the body. The common skunk s found throughout North America, ut is most abundant in the Hudson Bay region. It is notorious for the owerful and offensive odor which it mits. So penetrating is the evil odor f this fluid that it is perceptible a mile off; and so persistent is it that lothes defiled by it can only be purified by prolonged hanging in smoke. Skunks usually raise from 6 to 10 oung in a season. If taken early hey are easily tamed and make pretty ets, for they are cleanly in habit nd rarely emit their offensive secretion save when provoked.

Skunkbill, Skunkhead, or **Skunktop,** the name given several pecies of ducks in the United States, s, the surf duck, and the Labrador uck.

Skunk Cabbage (Symplocarpus fœtidus), a plant of the natural order Araceæ or arums, so named from its smell.

Skye, after Lewis, the largest of the Scotch islands, and the most N. of the Inner Hebrides, is included in Inverness-shire; area, 547 square miles. It is very irregular in shape, and is so cut up by inlets that no part of it is more than 4 miles from the sea. Its extreme length from Aird Point to Sleat Point is 47 miles; its greatest breadth, from Portree to Copnahow Head, 22 miles. Skye is a wild, highland country, and its rocky mountains and pale headlands are shrouded in the mists of the Atlantic.

Toward the S. W., bounding Loch Scavaig, are the romantic Cuchullin Hills, jagged and precipitous, attaining their greatest height of 3,183 feet in Scuirna-Gillean. The outlying Blabhein (pronounced Blaavin), 3,200 feet high, rises to a narrow ledge, overhanging a lofty precipice on either side. In the bleak promontory of Trotternish rises the Quiraing (1,774 feet), perhaps the most singular sight in Skye. It is a natural basaltic cathedral, formed by huge fluted columns of basalt and rugged pyramidal masses, in the midst of which stands a truncated rocky hill. This hill rises abruptly; its sides are worn by rivulets and ribbed with fissures, and at its top is a spacious verdant plateau, 100 paces by 60.

The N. part of Skye is still spoken of as "Macleod's country," and the S. part is the country of the Macdonalds.

The inhabitants are mainly Celtic, and universally speak Gaelic, though the use of English is gradually increasing. Since 1851 the population has decreased, chiefly by emigration, to the extent of one-fifth. The chief families in Skye are the Macdonalds of Sleat, who trace their descent to the Lords of the Isles, and the Macleods, originally Norsemen, who still occupy old Devegan Castle. The island is historically interesting as the home of Flora Macdonald and the refuge of Prince Charles.

Skye Terrier, a breed of dogs supposed to be the outcome of a cross between the native dog of Skye and a Maltese terrier.

Skylark, one of the most popular European cage birds from the variety and power, rather than the quality, of its song, and the ease with which its health is preserved in captivity. It is an inhabitant of all the countries of Europe, many migrating to the S. in winter.

Sky-rocket, a firework composed of a mixture of niter, sulphur and charcoal tightly rammed in a stout paper case, which ascends when the compound is ignited at the lower end. A stick is attached to one side of the case to steady the flight.

Sky-scraper, a name given to the very tall buildings to be seen in the larger American cities, particularly New York and Chicago. They are all strong structures supported by steel frames resting on great cantilevers sunk down to bed rock, some 70 feet below the street level.

Sladen, Douglas Brooke Wheelton, an English poet; born in London, Feb. 5, 1856.

Slafter, Edmund Farwell, an American historian; born in Norwich, Vt., May 30, 1816; was graduated at Dartmouth College in 1840; took a course at Andover Theological Seminary; was ordained in the Protestant Episcopal Church in 1845; and held various pastorates. In 1877 he turned his attention to the study of history. His publications include "Sir William Alexander and American Colonization," "Voyages of the Northmen to America," etc.

Slag, in metallurgy, vitreous mineral matter removed in the reduction of metals; the scoria from a smelting furnace. It is used for making cement and artificial stone, in the manufacture of alum and crown glass, and is cast into slabs for pavements, garden rollers, etc.

Slaked Lime, calcium hydrate; produced by sprinkling calcium oxide with water. When a mass of lime is moistened with water, an energetic combination takes place, accompanied occasionally with slight explosions, due to the sudden evolution of steam; the mass splits in all directions, and finally crumbles to a soft, white, bulky powder. It is chiefly employed in the preparation of mortar for building purposes.

Slander, defamation; a false tale or report maliciously uttered, and tending to injure the reputation of another.

Slang, a low and inelegant, but often expressive, form of colloquial language. Many words which originate as slang finally take their places in the language of literature and speech.

Slate, a very remarkable form of clay rock, frequently fossiliferous and not confined to one geological period. Consisting essentially of clay, the particles of slate are so mechanically arranged that the rock splits with perfect facility into almost indefinitely thin layers in one direction only, and in all others either breaks with a jagged edge, or in well defined joints at some distance from each other. Mineralogically slate is nothing more than a pure clay; nor does there seem any reason to suppose that any approach is made in it toward crystalline structure. Practically slate is very valuable, owing to its peculiar facility of splitting and the perfectly smooth natural face which it presents. Its hardness and compactness preserve it from all weathering by mere exposure, though, when ground down, it easily passes back into fine clay. For a long time slate was used almost exclusively for roofing. Slabs are now used in house fittings; as in strong rooms, powder magazines, larders, partitions, baths, stables, floors, drains, etc.

Slater, John Fox, an American philanthropist; born in Slaterville, R. I., March 4, 1815; engaged in business and so enlarged his operations that in 1872 he became sole owner of the mill property he was conducting. He also made profitable investments, and in a few years acquired a large fortune. He was early interested in the cause of education, and gave liberally to the establishment of the Norwich Free Academy. He died in Norwich, Conn., May 7, 1884.

Slater, Samuel, an American manufacturer; born in Belper, England, June 9, 1768; was apprenticed to Strutt, Arkwright's partner in cotton spinning, in 1782; came to the United States to promote cotton manufactures in 1789; settled in Pawtucket, R. I., in 1790; and there built and started the first cotton mill in the

United States, with 72 spindles and three carding machines. Afterward he built cotton mills at what is now Webster, Mass., and erected woolen mills at the same place in 1815–1816. He died in Webster, Mass., April 21, 1835.

Slater Fund, a gift of $1,000,000 made by John Fox Slater, of Norwich, Conn., in 1882, to a board of trustees, for the purpose of "uplifting the lately emancipated population of the Southern States and their posterity." For this patriotic and munificent gift the thanks of Congress were voted, and a medal was presented. Neither principal nor income is expended for land or buildings. Education in industries and the preparation of teachers are promoted in institutions believed to be on a permanent basis.

Slaughter Houses, premises in which cattle are slaughtered and prepared for human food. The largest slaughter houses in the world are in Chicago, Ill., and Kansas City, Mo.

Slavery, the state or condition of a slave, bondage. Slavery in the full sense of the term implies that the slave is the property or at the disposal of another, who has a right to employ or treat him as he pleases; but the system has been subjected to innumerable limitations and modifications. Slavery probably arose at an early period of the world's history out of the accident of capture in war.

Slavic Nations, a group that forms a large and important branch of the Aryan family, numbering about 80,000,000, and occupying nearly a third of Europe. Of their history prior to the 6th century of our era little is known with certainty. No evidence exists even in tradition as to the time at which the Slavs entered Europe, but their wave of immigration appears to have been later than the Celtic, Græco-Italic, and Teutonic waves. The E. shores of the Baltic, in the neighborhood of which are still found the dwindling remains of the Lettic races, are claimed as the early homes of some Slavic tribes, while others are supposed to have dwelt near the N. shores of the Black Sea, or roamed over the vast tract vaguely designated as Sarmatia, stretching from the Caspian toward the mouth of the Vistula. From the 5th century B. C. they are supposed to have existed in Europe for nearly 1,000 years without materially affecting its history. At length a S. movement seems to have brought them into contact with the Roman empire, and in the 6th century of our era they appear in the works of the historians Jornandes and Procopius as Sclavini or Sclabenoi; names from which comes the superfluous c in the word "Sclavonic." The origin of the name Slav is uncertain. Ranked at first among the barbaric foes of the Empire, the S. and W. Slavs gradually became civilized. The N. Slavs were not all equally fortunate, many of their tribes being gradually driven out or absorbed without ever attaining political importance. But in the N. E. a combination of Scandinavian rulers and Slav subjects laid the foundations of the power which eventually developed into the Russian empire.

Sleep, that natural state or condition of unconsciousness in animals which alternates with a period of activity. In this state the involuntary functions, such as those of nutrition, secretion, etc., go on as usual, but the voluntary powers are quiescent. All action in the living economy produces waste of tissue; and rest is necessary in order that the deficiency may be made up. Hence it is that we feel refreshed after sleep; the muscles possess greater strength, the nerves have attained a higher sensibility, and the powers of the mind are more active.

Sleeper, in shipbuilding, a fore-and-aft floor timber in a ship's bottom. Also a knee-piece connecting the transom and after-timbers to strengthen the counter. Similar timbers strengthen the bows of whalers. In ordnance, the undermost timbers of a gun or mortar platform, or, generally, of any frame work. In carpentry, one of the set of timbers supporting the lower floor of the building. The sleepers in a wooden frame, rest on the sills. In a brick or stone house they rest on the walls. Also, one of a set of logs or scantlings laid beneath a rough floor, as of a pen, shed, or temporary stable. In railroad building, one of the timbers supporting a railway track. When it is longitudinal with the track it is called a stringer or sill; when it is

transverse it is called a sleeper or tie. In weaving, the upper part of the heddle of a draw loom through which the thread passes.

Sleet, snow or hail which is in a partially melted condition before it reaches the surface of the earth.

Sleighs, traveling vehicles without wheels, which in some form are in use in all countries where snow lies for any considerable part of the year. Usually they are on runners — either one or two pairs — which are connected by a framework and support the body of the vehicle. In the United States and Canada, where sleighs are brought to great perfection, lightness, and beauty, they take the place of carriages in winter; and sleds of lighter build, and supporting a light platform or seat, are made for coasting down hills. In Canada toboggans are in popular use for coasting and consist of a single length of wood about ¼ inch thick, curved backward in front, and the curved portion held back by leather thongs.

Slichter, Charles Sumner, an American educator; born in St. Paul, Minn., April 16, 1864; was graduated at the Northwestern University in 1885. He was made Professor of Applied Mathematics at the University of Wisconsin in 1892 and commissioner and secretary of the Wisconsin Geological and Natural History Survey in 1900.

Slidell, John, an American statesman; born in New York city, about 1793; was graduated at Columbia University in 1810; studied law, and in 1819 went to New Orleans, where he soon acquired a large practice. He was appointed United States district attorney for Louisiana in 1834; elected to Congress in 1843; made minister to Mexico in 1845; and was in the United States Senate in 1853–1861. In September, 1861, he was appointed a Confederate commissioner to France, and in November set out with his associate, James M. Mason, for Southampton. Both commissioners were seized on the English mail steamer "Trent" by Capt. Charles Wilkes of the United States steamer "San Jacinto," and brought to the United States. He was released and sailed for England in January, 1862. From England he at once went to Paris, where his mission, which had for its object the recognition of the Confederate States by France, was a failure, but he succeeded in negotiating a large loan and in securing the ship "Stonewall" for the Confederate government. After the war he settled in London, England, where he died July 29, 1871.

Sliding Scale, a scale of payments varying under certain conditions, as: (1) A scale for raising or lowering imposts in proportion to the fall or rise in the price of the goods. (2) A scale of prices for manufactured goods, which is regulated by the rise and fall in the price of the raw material. (3) A scale of wages which rises and falls in proportion to the rise or fall in the market value of the goods turned out.

ANCIENT SLING AND SLINGER.

Sling, a short leather strap having a string secured to each end, by which a stone is hurled.

In machinery, a device for holding articles securely while being hoisted or lowered.

Slips, Propagation by, a mode of propagating plants, which consists in separating a young branch from the parent stock and planting it in the ground. Slips from trees of which the wood is white and light succeed best.

Sloane, Rush Richard, an American abolitionist; born in Sandusky, O. He was twice elected probate judge; delegate to the Pittsburg convention which organized the Republican party; for several years a member of the Republican State Committee of Ohio; chairman of the Ohio Republican State Central Committee in 1865–1866; elected mayor of Sandusky in 1878; and prominent in Democratic politics after 1872. He became conspicuous in the abolition movement; and for defending five slaves who had escaped from bondage was arrested under the second Fugitive Slave Act in 1852, being the only person prosecuted under that law.

Sloane, Thomas O'Conor, an American scientist; born in New York Nov. 24, 1851; was graduated at St. Francis Xavier's College, New York city, in 1869; and soon afterward became Professor of Natural Sciences in Seton Hall College, South Orange, N. J. He was the inventor of a self-recording photometer, described a new process of determining sulphur in illuminating gas; and was successively the editor of the "Plumber and Sanitary Engineer," the "Scientific American" and the "Youth's Companion."

Sloane, William Milligan, an American historian; born in Richmond, O., Nov. 12, 1850; was graduated at Columbia in 1868; studied in Berlin and Leipsic (1872–1876), and during part of that time was private secretary of George Bancroft, then minister at Berlin. He was for several years a professor at Princeton, later Professor of History at Columbia. In 1897 he brought out a very important "Life of Napoleon."

Sloanea (named after Sir Hans Sloane, 1660–1753). Tropical American trees, often above 100 feet high, with very hard wood. S. jamaicensis is the breakax or ironwood. The fruit of S. dentata is eaten.

Slocum, Henry Warner, an American military officer; born in Delphi, Onondaga co., N. Y., Sept. 24, 1827. He was graduated at the United States Military Academy in 1852; resigned his commission in 1856; studied law, and practised in Syracuse, N. Y. He was elected a member of the State Legislature in 1859. When the Civil War broke out he was commissioned a colonel of volunteers in the Union army; was placed in command of a corps on the left wing of General Sherman's army; and took part in the great "March to the Sea," leading the left wing of the army from Atlanta to Savannah. In September, 1865, he resigned from the army; settled in Brooklyn; and resumed the practice of law. He was elected to Congress in 1869 and served till 1873. He died in Brooklyn, N. Y., April 14, 1894.

Slocum, Joshua, an American navigator; born in Wilmot township, Annapolis co., Nova Scotia, Feb. 20, 1844; was a sailor from boyhood; studied nautical astronomy and marine architecture. He built a steamer of 90 tons' register in 1897; and the "Spray" of 9 tons' register, in Fairhaven, Mass., in 1892, in which he made a complete voyage around the world alone in 1898.

Sloe, or **Slo,** a small, bitter European plum. Found in hedges, coppices, and woods. Called also blackthorn, and, more rarely, blackthorn may. The leaves of the sloe are often used to adulterate tea.

Sloop, a fore-and-aft rigged vessel with one mast, like a cutter, but having a jibstay and standing bowsprit, which the cutter has not. Sloop-of-war, formerly vessels carrying from 10 to 18 guns, but since the introduction of steamships the number of guns has ceased to be distinctive, and the term is now seldom used.

Sloth, in zoölogy, the popular name for any individual of the Edentate group Tardigrada, from their slow and awkward movements on the ground, owing to the peculiar structure of the wrist and ankle joints. The feet are armed with long claws, and turned toward the body, so that the animal is compelled to rest on the side of the hind foot, while the disproportionate length of the fore-limbs causes it to rest also on the elbows.

It shuffles forward, alternately stretching the fore legs and hooking the claws into the ground, or grasping some object to draw itself along. Sloths are natives of South America, nocturnal in habit, and are found in the forests of that region, passing their lives among the branches of trees, on the leaves and young shoots of which they feed.

GIANT SLOTH.

Sloth Bear, in zoölogy, the Indian bear, found throughout the Peninsula and in Ceylon.

Slovaks, the name of the Slavic inhabitants of North Hungary who in the 9th century formed the nucleus of the great Moravian kingdom, but who, after the bloody battle of Presburg (A. D. 907), were gradually subjugated by the Magyars, to whom even yet they entertain no friendly feeling. Their number is reckoned at 2,750,000, of whom 800,000 belong to the Protestant, and the rest to the Catholic Church. The Slovaks, whose character probably comes nearest to that of the old Slavic type, travel in great numbers over Germany and Poland as peddlers. Their language is a dialect of the Bohemian.

Slow Match, a match made so as to burn very slowly. The commonest kind of slow match is a piece of slightly twisted hemp rope dipped in a solution of saltpeter, sugar of lead, etc. Slow matches are chiefly used to fire mines or blasts, the object of using them being to allow the person who fires them to escape to a safe distance before the explosion takes place.

Sloyd, the name given to a certain system of manual instruction which obtains popularity in the schools of Finland and Sweden, and which has been largely adopted in other countries, especially in the United States. The word properly denotes work of an artisan kind practised not as a trade or means of livelihood, but in the intervals of other employment. The fundamental idea of the educational sloyd is to utilize this sloyd work in the schools in a disciplinary way as an integral part of general education. To this end the older children, generally boys, are engaged for a certain number of hours a week in making articles of common household use varying from simple objects such as a flower stick or a pen rest to more complicated articles such as a cabinet or small table. These objects are made from drawings or from models, but to exact measurements, and the utmost accuracy and finish are insisted on. The tools employed are the ordinary tools of the carpenter, with certain exceptions, the most important of which is the knife. It is held that work of this kind is valuable as supplementing and correcting the ordinary school education in the three R's.

Slug, in zoölogy, naked, air-breathing mollusks, universally distributed, committing great ravages in fields and garden crops in moist weather, but becoming dormant during frosts. The body is generally oval or oblong, elongated, from one to three inches in length, the creeping disk, or sole of the foot, extends the whole length of the animal, but, like snails, slugs frequently raise their heads and move their tentacles in search of objects above them. They often climb trees, and can lower themselves to the ground by the accumulation of mucus at the extremity of the tail hardening into a gelatinous thread.

Sluice, in hydraulics, a frame of timber, stone, or other solid substance, serving to retain and raise the water of a river or canal, and when necessary, to give it vent. The word is

also applied to the stream of water issuing through a flood-gate.

Slur, in music, the smooth blending of two or more notes not on the same degree; also a curved line placed over or under notes, directing that they are to be played legato.

Smack, a small vessel rigged as a cutter, sloop, or yawl, used in the coasting trade and in fishing.

Smalkaldic Articles, articles of guarantee drawn up by Luther at Wittenberg in 1536, and subscribed by the theologians present at a meeting of the League in 1537. It was a summary of the religious principles of the League, designed to be presented to the council proclaimed by Pope Paul III.

Smalkaldic League, a defensive alliance, formed in 1531, between the whole of Northern Germany, Denmark, Saxony, and Wurtemburg, with portions of Bavaria and Switzerland, for the defense of the Protestant religion and the political freedom of its adherents against Charles V. and the Catholic powers. The struggle known as the War of Smalkald commenced in 1546, and was carried on with varying fortune on both sides till the objects of the League were attained in 1552, when Maurice, Elector of Saxony, compelled the Emperor to grant the treaty of Passau, which was ratified in 1555.

Smalley, George Washburn, an American journalist; born in Franklin, Mass., June 2, 1833. During the American Civil War, the war between Prussia and Russia, and the Franco-German War, he distinguished himself as war correspondent of the New York "Tribune," and as representative of the same in London (1867–1895) he gained an eminent rank in journalism. He became American correspondent of the London "Times" in 1895.

Smallpox, an eruptive febrile disease, which happily is not now nearly so prevalent as it once was. This disease commonly commences with the usual febrile symptoms; as rigors, pain in the back and loins, great prostration of strength, followed by heat and dryness of the skin. About the third day an eruption of small, hard, red-colored pimples makes its appearance about the face and neck, and gradually extends over the trunk and extremities. The pimples gradually ripen into pustules, which, on the eighth day, generally begin to break, and crusts or scabs form on these last, falling off in four or five days more. The severity of the disease varies much in different instances, but is almost always in direct relation to the quantity of the eruption. When the pustules are numerous they run together and form an irregular outline; when fewer they are distinct and of a regularly circumscribed circular form. The former being never free from danger, the latter seldom or never dangerous.

Like measles and scarlatina, this disease frequently gives rise to others of a troublesome or dangerous nature; as glandular swellings, abscesses, pleurisy, loss of sight, consumption, etc. Smallpox is the effect of specific contagion communicated by contact or through the air. There is no disease of which the contagion is so sure, and which operates at a greater distance, than that of smallpox; but it rarely attacks the same individual more than once.

Smalt, in chemistry, a vitreous substance prepared by melting roasted cobalt ore with silica and potash, and grinding the product to a fine powder. It is sometimes called powder blue, and is used to give a blue tinge to writing paper, linen and starch, and not being affected by fire is frequently employed in painting earthenware.

Smart, Sir George Thomas, an English musician; born in London, England, May 10, 1776. By industry and careful study he rose to be composer and organist to the Chapel-Royal, St. James's, and directed the music at the coronation of William IV. and Queen Victoria. He was knighted in 1811. Among his pupils were Madame Sontag and Jenny Lind. He died in London, Feb. 23, 1867.

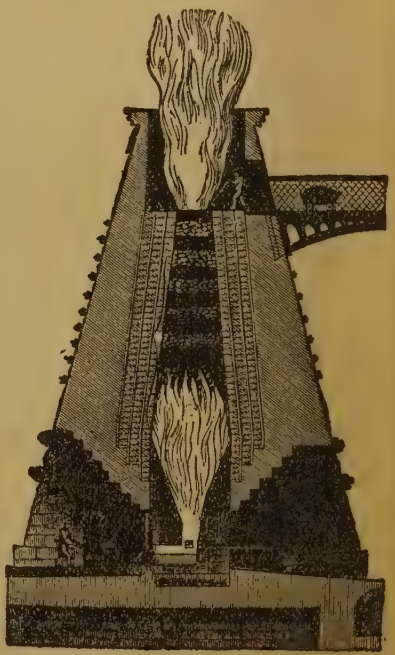
Smart, Mrs. Helen Hamilton (Gardener), an American novelist; born in Winchester, Va., Jan. 21, 1858. She labored for social and ethical reform and for the development of woman. Among her works are: "An Unofficial Patriot," "Historical Sketches of Our Navy," etc.

Smeaton, John, an English civil engineer; born in Austhorpe, near Leeds, England, June 8, 1724. In 1751 he invented a machine for measuring a ship's way at sea, and also a new form of compass. In 1753 he was elected a fellow of the Royal Society, and was awarded the Copley medal in 1759. In 1755 he was intrusted with the rebuilding of the Eddystone lighthouse, which was completed in October, 1759. It stood till 1882, when it was replaced by a new structure. Smeaton was subsequently employed on many works of great public utility, including the Forth and Clyde canal and Ramsgate harbor. He also perfected Newcomen's steam engine. He died in Austhorpe Oct. 28, 1792.

Smell, in physiology, the power or faculty of perceiving odors. For this purpose the animal is provided with a special nerve called the olfactory nerve, in which alone this faculty resides. In man the filaments of this nerve are distributed in minute arrangements in the mucous membrane covering the interior and upper cavities of the nose. All animals do not perceive the same odors in an equal degree. Carnivorous animals, for instance, have the power of detecting by the smell the special peculiarities of animal matters, and of tracking other animals by the scent, but apparently are not sensible to the odors of plants and flowers; while, on the other hand, herbivorous animals are peculiarly sensitive to the latter and have little sensibility to animal odors.

Man is inferior to many animals in respect to acuteness of smell, but his sphere of susceptibility to various odors is more uniform and extended. The cause of the difference in the effect of different odors is unknown. Great differences in this respect exist among different individuals, many odors which are generally thought agreeable being to some persons intolerable and different persons describe differently the sensations which arise from the same odorous substances. Further, the acuteness of this sense differs greatly in different individuals, and there seems to be in some persons insensibility to certain odors, and in the case of sight to certain colors. Linnæus has divided odors into seven different classes: Aromatic, as the carnation; fragrant, as the lily; ambrosial, as musk; allianceous, as garlic; fetid, as the rag-wort, valerian; virulent, as Indian pink; nauseous, as the gourd.

Smelt, a small anadromous fish; common on the coasts and in the fresh waters of Northern and Central Europe, and of corresponding American latitudes, from August to May, returning to the sea after it has deposited its eggs. The smelt is one of the most delicate food fishes.



HOT BLAST SMELTING FURNACE.

Smelting, the act or process of obtaining metal from ore by the combined action of heat, air, and fluxes. In smelting iron the ore is first roasted in a kiln in order to drive off the water, sulphur, and arsenic with which it is more or less combined in its native state, and is then subjected to the heat of a blast furnace along with certain proportions of coke or coal and

mestone, varying according to the uality and composition of the ore o be heated.

Smelting Furnace, a furnace for isengaging the metal from its gangue r the non-metalliferous portions of ne ore. The furnaces differ much, ac- ording to the metals to be treated.

Smilax, sarsaparilla, the roots f several species or varieties con- itute the sarsaparilla of the ma- eria medica. The kind most valued is nat known as Jamaica sarsaparilla. t is not the produce of Jamaica, but f Central America and the N. parts f South America. Other kinds dis- nguished in commerce are Lima, isbon, or Brazilian, and Honduras.

Smith, Adam, a Scotch political conomist; born in Kirkcaldy, Fife- hire, Scotland, June 5, 1723. He tudied at Oxford, and was appointed rofessor of Moral Philosophy at lasgow University in 1752. Toward he close of 1763 he accepted an invi- ation to travel with the Duke of Buc- euch, and having resigned his chair, ade a long tour in France, becoming cquainted at Paris with some of the ost eminent philosophers and econ- nists. Returning in 1766, he spent he next 10 years in retirement at irkcaldy, engaged in the composition f his great work, the "Inquiry into he Nature and Causes of the Wealth of ations" (1776). It has a high rank mong the successful books of the orld — overthrowing the grave errors hich it attacked, and establishing heir opposite truths. Its main prin- ple is that labor, not money or land, the real source of wealth. The means f making labor most fruitful, the di- sion of labor, what wealth consists , the mischiefs of legislative inter- rence with industry and commerce, he necessity of freedom of trade, are dmirably discussed and expounded. he book may be regarded as the basis f modern political economy. Smith as chosen lord-rector of the Univer- ty of Glasgow in 1787. He died in dinburgh, July 17, 1790.

Smith, Andrew Jackson, an merican military officer; born in ucks co., Pa., April 28, 1815; was raduated at the United States Mili- ry Academy in 1838, and assigned to rontier duty. At the outbreak of the Civil War he was assigned to the Department of Missouri. Subsequently he was transferred to the Department of the Ohio, and later to the Army of the Tennessee, which he accompanied on the Yazoo river expedition. He was mustered out of the volunteer service in January, 1866, and in July became colonel of the 7th United States Cavalry, but resigned in 1869. On Jan. 22, 1889, was reappointed to the army, and on the same day was placed on the retired list. He died in St. Louis, Mo., Jan. 30, 1897.

Smith, Buckingham, an American historian and philologist; born on Cumberland Island, Ga., Oct. 31, 1810. He was secretary of legation at Mexico (1850–1852), and at Madrid (1855–1858). He made an exhaustive study of Mexican history and antiquities, and published many monographs and historical papers. He died in New York, Jan. 5, 1871.

Smith, Charles Emory, an American journalist; born in Mansfield, Conn., Feb. 18, 1824; was graduated at Union College in 1861. He was United States minister to Russia in 1890–1892; and postmaster-general 1898–1901, when he resigned to resume the editorship of the Philadelphia "Press."

Smith, Charles Ferguson, an American military officer; born in Philadelphia, Pa., April 24, 1807; was graduated at the United States Military Academy in 1825. He was in active service during the Mexican War, commanding a light battalion, and won distinction for bravery at Palo Alto, Resaca de la Palma, Monterey, Churubusco, etc. At the outbreak of the Civil War he was appointed a Brigadier-General of volunteers; at the head of a division captured the heights commanding the fort at the battle of Fort Donelson in 1862. In March of the same year was promoted Major-General of volunteers. He died in Savannah, Tenn., April 25, 1862.

Smith, Charles Henry, pseudonym "Bill Arp," an American humorist; born in Lawrenceville, Ga., June 15, 1826; served in the Confederate army in 1861–1865, becoming major on staff of 3d Georgia Brigade. His literary career began (1861) in a series of letters. Died 1903.

Smith, David M., an American inventor; born in Hartland, Vt., in 1809; patented a combination lock in 1849 and in 1860 began the manufacture of a spring hook and eye for which he also devised the machinery. Subsequently he took out nearly 60 patents, among which was that for the machinery used in folding newspapers. Died in Springfield, Vt., Nov. 10, 1880.

Smith, Edmund Kirby, an American military officer; born in St. Augustine, Fla., May 16, 1824; was graduated at the United States Military Academy in 1845, and appointed a lieutenant of infantry. In the war with Mexico he was twice brevetted for gallantry. In 1861 he was promoted major, but resigned on the secession of Florida and entered the Confederate army. He took part in the battle of Bull Run. In 1864 he defeated General Banks in his Red river campaign. He was president of the Atlantic and Pacific Telegraph Company in 1866–1868; chancellor of the University of Nashville in 1870–1875; and Professor of Mathematics in the University of the South, Sewanee, Tenn., from 1875 till his death there, March 28, 1893.

Smith, Mrs. Erminnie Adelle (Platt), an American ethnologist; born in Marcellus, N. Y., April 26, 1836. When only 16 years old she was graduated from Willard's Troy Seminary. In 1880 the managers of the Smithsonian Institution obtained her services to investigate the history, customs, and lore of the Iroquois Indians. Mrs. Smith joined the tribe, and received the name of Ka-tel-tee-sta-Keost, the English of which is "Beautiful Flower." She continued her Indian studies, and at the time of her death was preparing a dictionary of the Iroquois tongue. She wrote many papers on Indian subjects. She died in Jersey City, N. J., June 9, 1886.

Smith, Francis Hopkinson, an American painter, writer and civil engineer; born in Baltimore, Md., Oct. 23, 1838. He was educated as a mechanical engineer; built the government wall around Governor's Island, one at Tomkinsville, L. I., the Race Rock lighthouse off New London, Conn., the foundation for the statue of Liberty Enlightening the World in New York harbor, etc. He won fame as a water-color artist and an illu trator and lecturer on art. Among h most popular books are: "Cal West," "The Other Fellow," etc.

Smith, Gerrit, an American ph lanthropist; born in Utica, N. Y March 6, 1797; was graduated Hamilton College in 1818. He ga pecuniary aid to John Brown, whose affair at Harper's Ferry, h however, it is thought, had no par He was nominated for governor New York in 1840 and in 1858; was member of Congress in 1853–1854, bu resigned after one session; wit Horace Greeley he signed the bail bon of Jefferson Davis in 1867. He was a earnest advocate of temperance and supporter of a number of reforms. H built a non-sectarian church at Pete boro, in which he occasionall preached. He died in New York cit Dec. 28, 1874.

Smith, Goldwin, an English hi torian; born in Reading, England Aug. 13, 1823; was educated at Eto and Oxford. As a lecturer he a tracted great attention both on a count of his strongly democratic view and his striking originality. Havin during the American Civil Wa strongly defended the cause of th North, he was at the close of the wa invited to visit the States to deliver course of lectures, and his visit re sulted in his becoming Professor History at Cornell University, Ne York. He resigned the appointment i 1871, and was appointed member the senate of the University of To ronto, where he afterward resided.

Smith, Green Clay, an America politician, military officer, and clergy man; born in Richmond, Ky., July 1832. He served a year in the Mex can War. In 1862 he entered th volunteer service of the Union army in which he attained the rank of Brig adier-General; was a member of Con gress from Kentucky in 1863–1866 governor of Montana Territory i 1866–1869; later a Baptist ministe mostly an evangelist, but in 1895 ac cepted the pastorate of the Metropol tan Baptist Church, Washington, D C. In 1876 he was the Prohibitio candidate for the presidency of th United States. He died in Washing ton, D. C., June 29, 1895.

Smith, Gustavus Woodson, an American military officer; born in Scott co., Ky., Jan. 1, 1822; was graduated at the United States Military Academy in 1842. In September, 1846, he was assigned to duty under General Scott in Mexico, as commander of the corps of sappers and miners, and for his services during that war, especially at Vera Cruz, Cerro Gordo, and Contreras, was brevetted 1st lieutenant and captain. In 1861 was commissioned a Major-General in the Confederate army. He was in command at Richmond in 1862; head of the State troops of Georgia in 1864–1865; and after the war engaged in business in Tennessee, Kentucky, and New York. Died in New York city, June 23, 1896.

Smith, Henry John Stephen, an Irish mathematician; born in Dublin, Nov. 2, 1826; was educated at Rugby and Balliol College, Oxford, taking a double-first in 1849. In 1861 he became Savilian Professor of Geometry. He was the greatest authority of his day on the theory of numbers, and also wrote on elliptic functions and modern geometry. In 1881 the French Academy offered their "Grand Prix" for a demonstration of certain theorems, ignorant of the fact that they had already been demonstrated 14 years before by Smith, to whom accordingly the prize of 3,000 francs ($600) was awarded, but not till a month after his death. He died Feb. 3, 1883.

Smith, Henry Preserved, an American educator; born in Troy, O., Oct. 23, 1847; was graduated at Amherst College in 1869. He came into special prominence in 1892 when he was accused of heresy and tried by the Cincinnati Presbytery. In 1893, pending the review of his case by the Synod and the General Assembly, he resigned his chair in Lane Seminary. Being convicted by both of these bodies he retired from the Presbyterian Church and accepted a professorship at Amherst College.

Smith, Hezekiah Wright, an American engraver; born in Edinburgh, Scotland, in 1828; came to the United States in 1833 and entered an engraving establishment. In 1850 he settled in Boston, Mass. Among his most important plates are a full-length of Daniel Webster; a three-quarter length of Edward Everett; and Gilbert Stuart's head of Washington. Subsequently he removed to New York city and later to Philadelphia. He gave up engraving in 1879.

Smith, James Argyle, an American military officer; born July 1, 1831; was graduated at the United States Military Academy in 1853; served in the Confederate army during the Civil War, becoming a Brigadier-General in November, 1863; was elected State Superintendent of Education of Mississippi in 1878 and 1882; engaged in the United States Indian service in 1893–1897; and was afterward marshal of the Mississippi Supreme Court. He died in Jackson, Miss., Dec. 6, 1901.

Smith, James Francis, an American military officer; born in San Francisco, Cal., Jan. 28, 1859. In 1898 he was appointed colonel of the 1st California Volunteers and accompanied the first expedition to the Philippines, where he took part in the battle of Malate on July 31, 1898, and in the capture of Manila in August. On April 29, 1899, he was promoted Brigadier-General of volunteers; on July 24 following became military governor of the island of Negros; and in April, 1900, was made military governor of the Viscayas.

Smith, John, an English adventurer, the founder of Virginia; born in Willoughby, in Lincolnshire, England, in January, 1579.

Smith entered with enthusiasm into the project of colonizing the New World, and with Gosnold, Winkfield, Hunt, and others set out in December, 1606, with a squadron of three small vessels for Virginia, under the authority of a charter granted by James I. Amidst the unhappy dissensions, difficulties, and distress of the first years of the great enterprise, Smith rendered the most important services by his irrepresible hopefulness, practical wisdom, and vigorous government. But for his wisdom and noble exertions the project would probably have been abandoned. He made important geographical explorations and discoveries. In 1607, ascending the Chickahominy, and penetrating into the interior of the country, Smith

and his comrades were captured by the Indians, and he only, by his rare self-possession, escaped with life. He remained a prisoner for some weeks, carefully observed the country, got some knowledge of the language of the natives, and when at last they were going to put him to death he was saved by the affectionate pleading of Pocahontas, the daughter of the chief Powhatan, a girl 10 or 12 years old. He visited Virginia in 1614, was captured by the French in the following year, and on his return to London after three months heard of the arrival of his Indian friend Pocahontas. Smith made known her services, and she was presented to Queen Elizabeth and loaded with marks of honor and gratitude. Smith published in 1608 "A True Relation of such Occurrences and Accidents of Note as hath Happened in Virginia since the First Planting of that Colony." He died in London, June 21, 1631.

Smith, John Lawrence, an American chemist; born near Charleston, S. C., Dec. 17, 1818; was educated at the University of Virginia and at the Medical School of South Carolina. Later he was appointed by the State of South Carolina to assay the bullion from the gold fields of Georgia and the Carolinas; investigated meteorological conditions, soils, and modes of cotton culture. He devoted much attention to meteorites, and his collection, which he bequeathed to Harvard, was the finest in the United States. He was a chevalier of the Legion of Honor; president of the American Chemical Society; one of the commissioners to the World's Fair in Paris in 1867; a judge in the Department of Chemical Arts at the Centennial Exposition in Philadelphia in 1876; and author of many valuable reports, scientific and technical papers, etc. He died in Louisville, Ky., Oct. 12, 1883.

Smith, Joseph, an American naval officer; born in Boston, Mass., March 30, 1790; was appointed to the United States navy in 1809, and commissioned lieutenant in 1813. He was 1st lieutenant on the brig "Eagle" in the victory on Lake Champlain; served on board the frigate "Constitution" in the Mediterranean in 1815–1817, and in 1843–1845 commanded the Mediterranean squadron, with the frigate "Cumberland" as his flagship. On his return to the United States he was appointed chief of the bureau of yards and docks, which post he filled till 1869, when he was made president of the examining board for the promotion of officers. He died in Washington, D. C., Jan. 17, 1877.

Smith, Joseph, the founder of the Mormons; born in Sharon, Windsor co., Vt., Dec. 23, 1805. About 1820 Joseph claimed to be a constant witness of supernatural visions and to be gifted with a supernatural sight. He pretended that he received in 1828 a divine revelation inscribed in mysterious hieroglyphics on golden plates which were delivered to him by an angel, and that the "Book of Mormon," which he published in 1830, was translated from those golden plates. The translation was dictated by him while he sat behind a curtain as if in the society of mysterious spiritual companions. He gathered a number of converts, and as "prophet" went with them first to Kirtland, O., and afterward to Independence, Mo. The subsequent events of his life are a part of the early history of the Mormons.

Smith, Joseph Fielding, a Mormon apostle; born in Far West, Mo., Nov. 13, 1838. He was ordained to one of the "seventies" in 1858 and to apostleship in 1866, becoming a member of the Council of Twelve in 1867. He was several times a member of the Utah Legislature, and in 1882 presided over the Constitutional Convention which framed the constitution for the State of Utah. He succeeded Lorenzo Snow as president of the Mormon Church in October, 1901.

Smith, Leigh, an English Arctic explorer; after amassing a fortune was seized with a desire to spend it in a search for the North Pole. He made two voyages of exploration and brought back important contributions to our knowledge of the polar regions.

The gold medal of the Royal Geographical Society was awarded to the plucky and fortunate explorer, who set sail again June 13, 1881, with Dr Neale, Captain Lofley, and a crew of 22 men, the vessel being provisioned for 14 months and having a two years' supply of flour and bread. The "Eira" was last seen on July 8, 1881, off the

W. coast of Nova Zembla, going N. No word having been received from the ship for over a year an expedition was fitted out to send in search of her. It consisted of a steam whaler, the "Hope," which was commanded by Sir Allan Young. It left London in June, 1882. The "Hope" reached Peterhead, Aberdeen, Aug. 20 following, bringing the entire crew of the missing vessel. The "Eira" had been caught in the ice and sunk off Cape Flora, Aug. 21, 1881.

Smith, Michael Hoke, an American statesman; born in Newton, N. C., Sept. 2, 1855. He studied law; practised in Atlanta; was proprietor of the Atlanta "Journal" in 1887–1898; and became Secretary of the Department of the Interior in 1893; resigning in 1896, and resuming the practice of law in Atlanta.

Smith, Sydney, an English clergyman; born in Woodford, Essex, England, June 3, 1771. Educated at Winchester School, Sydney, in 1789, entered New College, Oxford, where he took his degree of M. A. in 1796, becoming fellow a few years afterward. In 1799 he went to Edinburgh as tutor to a young gentleman, continued there for five years, and was one of the founders in 1802 of the "Edinburg Review," being also one of its most influential contributors. In 1804 he removed to London, about the same time married, and became renowned as one of the wittiest and most genial of men. In 1831, during the ministry of Earl Grey, he became one of the canons of St. Paul's. Died in London, Feb. 22, 1845.

Smith, Thomas Southwood, an English sanitarian; born in Martock, Somersetshire, England, in 1778. He studied medicine at Edinburgh. After several years of hospital work he embodied his experience in a "Treatise on Fever" (1830), which has been described by a competent authority as the best work on the subject that has ever been written. In 1832 he was appointed one of the commissioners to inquire into the condition of factory children, and his report led to the passage of the Factory Act, which put an end to the inhuman treatment to which children had been subjected in factories up to that time. His inquiry into the condition of children and young persons employed in mines led to the exclusion of children and women from British mines. In 1846 his report on the means requisite for the improvement of the health of the metropolis resulted in the Public Health Act of 1848. He also did immense service to the cause of science by his reports on cholera and quarantine. He died in Florence, Italy, in 1861.

Smith, William, the "father of English geology"; born in Churchill, Oxfordshire, England, March 23, 1769. He became convinced that each stratum contained its own peculiar fossils, and might be discriminated by them, and in 1815 he was able to submit a complete colored map of the strata of England and Wales to the Society of Arts, and received the premium of $250 which had for several years been offered for such a map. His fame as an original discoverer was now secure; but becoming involved in pecuniary difficulties he was obliged to part with his geological collection to the government for $3,500. Subsequently a pension was granted to him by the government. He died in Northampton, England, Aug. 28, 1839.

Smith, William, an English classical scholar; born in London, England, in 1813 or 1814. He was of great learning, and his works have been very influential in the guidance and extension of scholarship. They include: "Dictionary of Greek and Roman Antiquities" (1840–1842); "Dictionary of Greek and Roman Biography and Mythology" (1843–1849), etc. He died Oct. 7, 1893.

Smith, William Farrar, an American military engineer; born in St. Albans, Vt., Feb. 17, 1824; was graduated at the United States Military Academy in 1845. At the outbreak of the Civil War he was assigned to duty under General Butler, and later commanded a division of the Army of the Potomac at the siege of Yorktown and in the battles of Williamsburg, Malvern Hill, Antietam, etc. He was appointed chief engineer of the Army of the Cumberland on Oct. 3, 1863, and subsequently planned the battles of Brown's Ferry and Missionary Ridge, and threw a bridge 1,500 feet long across the Tennessee river for Sherman's army. After the

war he resigned from the army and became president of the International Ocean Telegraph Company and of the New York Board of Police. Died 1903.

Smith, Sir William Sidney, an English naval officer; born in Westminster, England, July 21, 1765. He entered the navy at the age of 12, received his lieutenancy at 16, and when 19 was created post captain. Appointed later to the "Tiger," Sir Sidney did good service in Syria and subsequently in Egypt against Bonaparte, receiving a severe wound at the battle of Alexandria. On his return to England various marks of distinction were bestowed on him, and in 1802 he entered Parliament as member for Rochester. He was created rear-admiral of the blue in 1805, and in 1806, as commander of a small squadron, inflicted signal injuries on the French off the coast of Naples. Next year he accompanied Admiral Duckworth to the Dardanelles, where he distinguished himself by the destruction of a Turkish squadron. He was made vice-admiral in 1810, admiral in 1821, and in 1830 succeeded King William IV. as lieutenant-general of marines. As a reward for his services he received a pension of $5,000 a year and the decoration of K. C. B. He died in Paris, France, May 26, 1841.

Smith College, an educational non-sectarian institution for women in Northampton, Mass.; founded in 1875.

Smithson, James, an English philanthropist; natural son of Hugh Percy, 3d Duke of Northumberland; born in England about 1754; was graduated at Oxford in 1786, and elected a member of the Royal Society in 1787. In 1835 his property, amounting to $508,318, came into the possession of the United States government, having been bequeathed by him "for the purpose of founding an institution at Washington, D. C., to be called the Smithsonian Institution for the increase and diffusion of knowledge among men." He died in Genoa, Italy, June 27, 1829.

Smithsonian Institution, a literary, scientific, and philosophical institution, organized at Washington, D. C., by Act of Congress in 1846, pursuant to the will of James Smithson. The management of the institution is in the hands of regents appointed by the United States government, and a spacious structure, containing a museum, library, cabinets of natural history, and lecture rooms, has been the result of their able administration of the testator's wishes. The library (150,000 volumes), carefully collected, is unsurpassed in the United States as a resource for scientific reference, while in its museum are collected the rich acquisitions of national exploring expeditions. Some part of its income is devoted to scientific researches, and the production of works too costly for publication by private individuals. Departments of astronomy, ethnology, meteorology, and terrestrial magnetism, have been established. The United States Weather Bureau has grown out of its department of meteorology, and the United States Fish Commission was established in connection with its work in ichthyology. Under its direction are the United States National Museum; the Bureau of International Exchanges; the Bureau of American Ethnology; the Astro-Physical Observatory; and the National Zoölogical Park.

Smith Sound, a passage of water leading to the Arctic regions, at the N. extremity of Baffin Bay, between Prudhoe, in Greenland, and Ellesmere Land. Its S. entrance was discovered by Baffin in 1616. In 1854 it was surveyed by a United States expedition under Dr. Elisha Kent Kane. A gulf 110 miles long was found at its N. E. end.

Smoke, the exhalations, visible vapor or substance that escapes, or is expelled, in the process of combustion, from the substance burning. In great cities, where bituminous coal is consumed on a large scale for manufacturing purposes, the atmosphere is constantly charged with clouds of smoke, which is diffused over everything. This has led to the manufacture of various devices to consume or otherwise do away with smoke which have met with various degrees of success.

Smoky Mountains, or **Great Smoky Mountains,** a range on the boundary of North Carolina and Tennessee; is a part of the Appalachian system. Mount Guyot, 6,636 feet high, and Clingman's Peak, 6,660 feet high, are among its loftiest summits.

Smollett, Tobias George, a British novelist and miscellaneous writer; born near Renton, Dumbartonshire, Scotland, in March, 1721. He was educated at the University of Glasgow, and was apprenticed to a surgeon. In 1740 he went to London and in 1748 he published his "Adventures of Roderick Random," a novel which brought him fame and fortune, which latter he needed badly.

He went to Paris in 1750, and about this time wrote his "Adventures of Peregrine Pickle," which appeared in 1751. He now obtained the degree of M. D., but never succeeded in practice. In 1761, 1762, and 1765 appeared his "Continuation of the History of England down to 1765," since often reprinted as a continuation of Hume's history. In 1766, after a residence of about two years on the Continent, he published his "Travels through France and Italy"; and 1767 his "History and Adventures of an Atom." He died in Monte Nuovo, near Leghorn, Italy, Oct. 21, 1771.

Smolt, a name given to young river salmon when they are bluish along the upper half of the body and silvery along the sides.

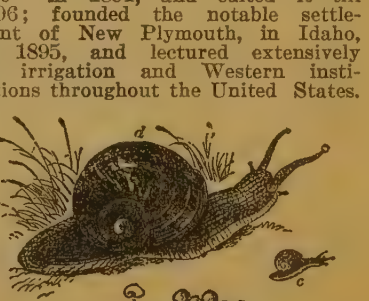
Smuggling, originally and strictly a crime of commerce, a violation of customs laws, to be distinguished from such a crime of manufacture as illicit distillation, which violates excise laws. But the term is commonly applied also to the evasive manufacture and disposal of commodities liable to excise as well as to the clandestine importation of articles on which customs duties have been imposed. Defrauding the government of revenue by the evasion of customs duties or excise taxes may therefore serve as a definition.

Smut, in botany, dust-brand; a fungus, which attacks the ears of barley, oats, and rye, but is seldom found on wheat. In appearance it resembles bunt, but it is inodorous. When examined microscopically, the black powder is found to consist of round spores, smaller than those of bunt and without reticulations. It has been ascertained that one square inch of surface would contain not less than eight millions of spores.

Smyrna (Turkish, Izmer), an ancient city and seaport of Asiatic Turkey, on the W. coast of Asia Minor, at the head of the gulf of the same name. Smyrna has been for centuries the most important place of trade in Asia Minor. The chief imports are cotton manufactures, woolen cloths, colonial goods, iron, steel, and hardware goods. The principal exports are dried fruits (especially figs, cotton, silk, goats' hair, sheep and camels' wool, valonia, madder root, yellow berries, sponges, and opium. The origin of Smyrna is lost in antiquity. It has repeatedly suffered from earthquake. Pop. estimated at 200,000.

Smyrna, Gulf of, formerly the Hermæan Gulf, an inlet of the Ægean Sea on the coast of Asiatic Turkey, so called from the town of Smyrna, which stands at its head. It is 40 miles in length by 20 at its broadest part, and contains several islands and affords good anchorage.

Smythe, William Ellsworth, an American journalist; born in Worcester, Mass., Dec. 24, 1861. Initiated the National Irrigation Congress of 1891; established the "Irrigation Age" in 1891, and edited it till 1896; founded the notable settlement of New Plymouth, in Idaho, in 1895, and lectured extensively on irrigation and Western institutions throughout the United States.



COMMON SNAIL.

a, eggs; *b*, appearance when newly hatched; *c*, slightly advanced stage; *d*, mature snail.

Snail, the common name of gasteropodous mollusks. They feed chiefly on vegetable substances, though they are very indiscriminate in their appetite and even devour the dead of their own kind. The mischief which they do to garden crops is well known. Snails delight in warm, moist weather; in

dry weather, their chief time of activity is during the night, and they hide themselves by day; but after rain they come forth at any hour in quest of food. At the approach of winter or in very dry weather they close the mouth of the shell with a membrane (epiphragm), formed by the drying of the mucous substance which they secrete, and become inactive and torpid.

Snake, a serpent, any species of the order Ophidia. The best-known harmless snake is probably the common snake, known also as the ringed or grass snake. The black snake, of which there are two species, is also very common in the United States. The common snake has no poison fangs, but is furnished with scent glands which secrete a volatile substance of offensive and penetrating odor. Snakes are partial to damp situations and enter water readily, swimming with ease. They are voracious and swallow their prey — frogs, mice, and small birds — alive and entire, their teeth, which are in two rows on each side of the jaws and directed backward, being too weak to tear or masticate.

Snakeroot, the popular name of numerous American plants of different species and genera, most of which are, or formerly were, reputed to be efficacious as remedies for snake bites.

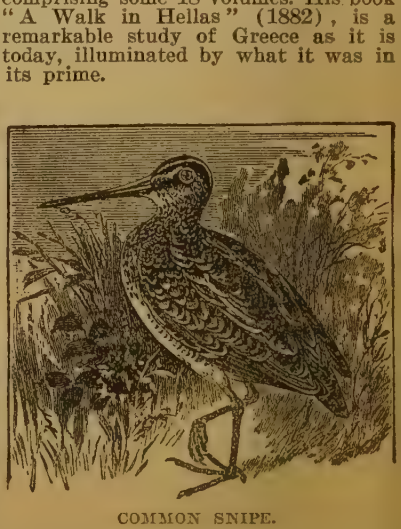
Snapping Turtle, a fresh water tortoise widely distributed over the United States. They grow to a considerable size, a weight of 20 pounds being far from uncommon, and are prized as food. Their popular name is derived from their ferocity in captivity, and their habit of biting or snapping at everything that comes in their way. Called also alligator terrapin and alligator tortoise.

Sneezing, a sudden violent and convulsive explosion of air through the nostrils, with a peculiar sound. It is preceded by a more or less long-drawn and deep inspiration, like that which precedes coughing; but the opening from the pharynx into the mouth is closed by the contraction of the anterior pillars of the fauces and the descent of the soft palate, so that the force of the blast is driven entirely through the nose. It is caused by the irritation of the inner membrane of the nostrils, and is designed to throw off any particles causing the morbid action.

Snelling, Fort, a military post in Hennepin co., Minn., on the Mississippi river, opposite St. Paul.

Snider, Jacob, inventor of a method for converting Enfield muzzle-loading rifles into breechloaders, originally a Philadelphia wine merchant; busied himself in inventions connected with dyeing, brewing, coach wheels, the sheathing of ships, etc., and went to England in 1859 to induce the British government to adopt his system of breech loading or converting. In this he succeeded, but for one reason or another found himself unable to obtain the expected remuneration. He died Oct. 25, 1866, without having received the reward of his labors, worn out by delays, lawsuits, poverty, and debts.

Snider, Denton Jacques, an American author; born in Mt. Gilead, O., Jan. 9, 1841; was graduated at Oberlin College in 1862. His studies of the great poets, Homer, Shakespeare, Dante, Goethe, and his writings on kindred topics, are very numerous, comprising some 18 volumes. His book "A Walk in Hellas" (1882), is a remarkable study of Greece as it is today, illuminated by what it was in its prime.

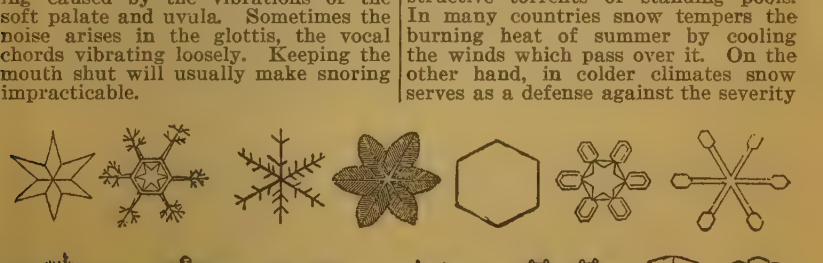


COMMON SNIPE.

Snipe, the name of a common family of birds. The common Ameri-

can snipe is about equal in size to the common snipe of Europe, and much resembles it also in plumage. The tail has 16 feathers. This species is abundant in summer in the N. parts of the United States and in Canada, and in the more S. States in winter. It is much in request for the table, and is often caught in snares. It is much esteemed as a delicious and well-flavored dish.

Snoring, an abnormal and noisy mode of respiration produced by deep inspirations and expirations through the nose and open mouth, the noise being caused by the vibrations of the soft palate and uvula. Sometimes the noise arises in the glottis, the vocal chords vibrating loosely. Keeping the mouth shut will usually make snoring impracticable.



SNOW CRYSTALS MAGNIFIED.

Snorri, Sturlason, an Icelandic poet and historian; born in Hvami, in the Dala district of Iceland, in 1178. By his marriage, first with Herdys (1199), and after her death with Hallveg Ormsdatter, gained great possessions, sometimes appearing at the Althing with a following of 800 to 900 men. Snorri was the last and one of the greatest of the Northern skalds. He wrote many panegyrics and heroic songs, and is believed to have been the author of part of the "Younger Edda." His principal work is the "Heimskringla" ("ring of the world"), a collection of sagas on the ancient history of Norway.

Snow, in meteorology, water solidified in stellate crystals, variously modified, and floating in the atmosphere. These crystals arise from the congelation of the minute vesicles which constitute the clouds, when the temperature of the latter is below zero. They are more regular when formed in a calm atmosphere. Their form may be investigated by collecting them on a black surface, and viewing them through a strong lens. The regularity, and at the same time variety, of their forms, are truly beautiful.

In the economy of nature snow answers many valuable purposes. By its gradual melting in high regions it serves to supply streams of running water which a sudden increase in the form of rain would convert into destructive torrents or standing pools. In many countries snow tempers the burning heat of summer by cooling the winds which pass over it. On the other hand, in colder climates snow serves as a defense against the severity of winter, where it protects plants against the frost and serves as a shelter to animals, which bury themselves in it. The elevation at which mountains are covered with perpetual snow is called the "snow line," or plane of perpetual snow. The snow line on the N. side of the Himalayan Mountains is 18,600 feet; on Chimborazo, 15,802 feet. The altitude of perpetual snow under the equator was fixed by Humboldt at 15,748 feet; toward the poles it is considerably lower. The snow line of the Alps, N. latitude 46°, is only 8,860 feet; and that of the Pyrenees about 8,850 feet. At the North Cape, in lat. 71°, it is only 2,300 feet.

Snow, Lorenzo, a Mormon apostle; born in Mantua, O., April 3, 1814; was converted to Mormonism in 1836; became a missionary in 1837, and traveled in England and other coun-

tries; and on his return to the United States organized and captained the Nauvoo Legion, the body of Mormon troops in Illinois. He was a member of the Utah Legislature in 1852–1882; founded Brigham City, Utah; was ordained one of the Twelve Apostles of the Church in 1849, and succeeded Wilford Woodruff as president of the Mormon Church in 1838. Died in Salt Lake City, Utah, Oct. 10, 1901.

Snowball Tree, the garden variety of the guelder rose.

Snowberry, a bushy, deciduous shrub, native of the N. parts of North America. It has simple leaves, small flowers, and white uneatable berries about the size of black currants, remaining on the bush after the leaves.

Snowbird, the common name of a genus of birds, distinguished by their bill small and conical, the wings reaching the basal fourth of the exposed portion of the tail, and the tail slightly emarginate. The common snowbird, or black snowbird, of the United States E. of the Missouri, is 6¼ inches long; grayish or dark ashy black. These birds appear in flocks in winter and are very tame; the flesh is delicate and juicy, and is often sold in the New Orleans market.

Snow Bunting, an Arctic passerine bird, visiting more S. latitudes in the winter. It is about seven inches in length, and its plumage varies considerably at different seasons. They feed on seeds and insects, and soon after their arrival in temperate regions become fat, and are then esteemed a delicacy. The Greenlanders kill them in great numbers and dry them for winter use. Their song is not unlike that of the lark, and when singing they perch near a mate; their call is a shrill piping note generally uttered on the wing.

Snowdrop, a well-known garden plant. It bears solitary, drooping, and elegant white flowers, which appear early in spring; is a native of the Alps, but quite common in gardens in the Northern United States.

Snowdrop Tree, a name of ornamental trees of the Southern United States with flowers like snowdrops, belonging to the styrax family.

Snow Goose, in ornithology, the Anser hyberboreus. It obtains its snow-white plumage only at maturity. It breeds in large numbers in the barren grounds of Arctic America and migrates S. during the winter.

Snow Plow, an implement used to clear a road or track of snow.

Snowshoe, a light frame made of bent wood and interlacing thongs, used to give the wearer a broader base of support when walking on snow. They are usually from three to four feet in length, and a foot to 18 inches broad in the middle.

Snowy Owl, a native of America and the N. of Europe. It flies by day and preys on the smaller mammalia and on various birds which it is able to capture.

Snuff, a fragrant powdered preparation of tobacco inhaled through the nose. There are numerous varieties.

Snyder, Simon, an American military officer; born in Selin's Grove, Pa., Feb. 9, 1839; was appointed a 2nd lieutenant in the 5th United States Infantry, April 26, 1861; was an aide-de-camp of General Couch during the Confederate raid into Maryland and Pennsylvania in 1864, and an acting aide to General Merritt in Sheridan's campaign. After the Civil War he served at various posts in the East and West till the outbreak of the Spanish-American War, when he was placed in command of the 1st Army Corps for service in Cuba. He was appointed governor of the province of Santa Clara, Cuba, Dec. 6, 1898, and later served on special duty at Ponce, Porto Rico. He was mustered out of the volunteer service, May 12, 1899, and ordered to the Philippines, where he commanded the United States troops in the district of Cebu. On his return to the United States he was appointed acting inspector of the Department of the Lakes.

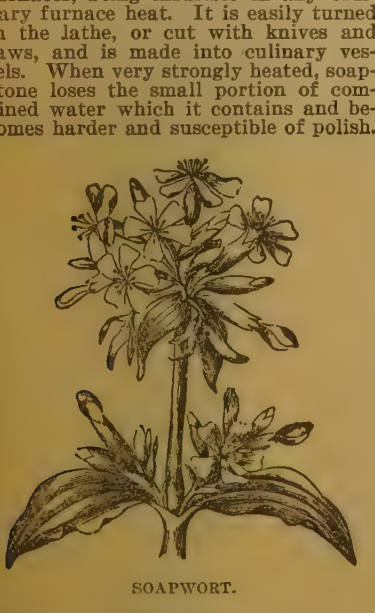
Soap, strictly speaking, a salt consisting of a fatty acid in combination with a metallic base. Ordinary soap is freely soluble in both hot and cold water, but if any of the earths, such as lime, be present, an insoluble compound is immediately formed; or, in common language, the soap curdles, from the water being hard.

Soap Bubbles. The blowing of soap bubbles is of great antiquity, and is to be seen depicted on an

Etruscan vase in the Louvre. The beautiful play of colors familiar to all is due to the excessive but variable thinness of the soap films. The spherical form of the ordinary soap bubble is a direct result of the action of surface tension, the geometrical condition being that with given volume the surface must have minimum area.

Soap Plant, a name common to several plants used in place of soap, as the Phalangium pomaridianum, a Californian plant.

Soapstone, or **Steatite,** a hydrated silicate of magnesia, with a smooth greasy feel like that of soap, and so soft as to yield to the nail. It is a massive variety of talc, which, when pure and compact, is much used as a refractory material for lining furnaces, being infusible in any ordinary furnace heat. It is easily turned in the lathe, or cut with knives and saws, and is made into culinary vessels. When very strongly heated, soapstone loses the small portion of combined water which it contains and becomes harder and susceptible of polish.



SOAPWORT.

Soapwort (Saponaria), a genus of plants of the natural order Caryophyllaceæ; so called because the bruised leaves produce a lather like soap when agitated in the water. Common soapwort grows by the roadside in the United States from New England to Georgia. It is a native of many parts of Europe, and is found on waysides, river banks, and thickets; in Great Britain it is found in alluvial meadows and under hedges. It has handsome pink-like flowers.

Socage, or **Soccage,** in old law, a tenure by any certain and determinate service; being in this sense put in opposition to knight service where the render was precarious and uncertain, and to villeinage, where the service was of the meanest kind.

Sociable. (1) An open carriage with seats facing each other, and thus convenient for conversation. (2) A species of tricycle. (3) A kind of seat with a curved S-shaped back, for two persons who sit partially facing each other. (4) A gathering of people for social purposes; a social party; an informal meeting.

Social Contract, or **Original Contract,** that imaginary bond of union which keeps mankind together, and which consists in a sense of mutual weakness and dependence.

Social Insects, the name applied generally to the species of bees, wasps, hornets, ants, white ants or termites, etc., which live in communities.

Socialism, a term sometimes used in a very general sense to designate the theories and plans of those who, from the earliest times to the present, have advocated radical changes in our social and economic order, and have done so in modern times especially in the interests of the common man, till the wage earner has now become the central figure in socialistic theory and agitation. While socialism in the broad general sense has reference to most diverse changes of a radical sort in the social and economic order in a narrower and more modern sense it means the theories and plans of those who would substitute public property in land and capital for private property in these instruments of production.

Modern socialism, as a popular movement has become thoroughly democratic, looks with little favor on the idea of classes permanently set apart for rulership, and is inclined to favor equal incomes while allowing each one to use his income as he might see fit.

Socialism holds that the present sys-

tem of industry which is carried on by private competing capitalists, served by competitive wage labor, must be superseded by a system of free associated workers utilizing a collective capital with a view to an equitable system of distribution. On this theory private property in land and capital will be abolished and the private receipt or rent and interest will cease. Incomes would be private as already stated and all such moderate wealth as would be devoted, not to production, but to consumption might be regarded as at the free disposition of the owner. Socialism is the extension to industry and economics of the free self-governing principle recognized in democracy. It is industry of the people by the people for the people. The company or private corporation is at present the growing power in industry; but even as regards the great companies, the control of the State and of social opinion is continually extending. The great companies are no longer conducted by the owners of the capital as such, but by a paid staff of officials under a manager; and in the opinion of socialists the whole organization could without shock be transferred to the direct service of the community.

Social Science, the systematic investigation of questions relating to public and domestic hygiene, education, labor, the punishment and reformation of criminals, the prevention of pauperism, and the like. The term has also been used to designate the science termed Sociology.

Social War, the name of a noted struggle in Roman history. M. Livius Drusus proposed a law for investing Italian allies with the privileges of Roman citizens; but it was strongly opposed by the senators, the knights, and the people, and Drusus was assassinated 91 B. C. The Marsi, who took the lead (whence the name Marsian or Marsic, also given to that war), the Peligni, the Samnites, the Lucani, and almost every nation in Italy except the Latins, Tuscans, and Umbrians, revolted and established a republic in opposition to that of Rome. The Romans were induced, hearing that Mithridates VI., King of Pontus, intended to aid the allies, to adopt measures of conciliation, and one state after another submitted and received the gift of Roman citizenship. After this the war dwindled away till it was brought to a conclusion 88 B. C., by the remainder of the Italian states receiving the concessions they required.

Society Islands, an archipelago in the South Pacific, lying between lat. 16°–18° S., and lon. 148°–155° W. There are 13 principal islands, besides numerous islets, and the total area of the group is estimated at 734 square miles, with a pop. of about 16,000. The chief islands are Tahiti, Eimeo, Huahine, Raiata, Tahaa and Bora-Bora. The Society Islands are of Basaltic formation and abound in lofty and precipitous mountains usually fringed by a belt of flat land. Two peaks in Tahiti are respectively 7,000 and 8,700 feet high. Coral reefs are very abundant round all the islands. The soil being extremely fertile and water plentiful, the vegetation of the islands is most luxuriant. The climate is healthy, but enervating. The inhabitants belong to the Polynesian race and are handsome, brave, and intelligent, but indolent, fickle, immoral, and passionately fond of ardent spirits. On account of their indolence Chinese and Hervey Islanders are imported to work the cotton plantations. The people of Huahine, however, are enterprising traders, and their flag is seen as far away as San Francisco. The Society Islands were discovered by De Quiros in 1606, but were first made known to the world by Cook, who visited them in 1769, and named them after the Royal Society. They have been the scene of missionary labors since 1797, and have for many years been entirely Christian. Taking advantage of a quarrel between the Protestant and Roman Catholic missionaries, the French espoused the cause of the latter, who were the last in the field, and seized the islands in 1844. In 1847 they were expelled by the natives from Huahine, Raiatea, and Bora-Bora, which, with small dependencies, were again ruled by their own sovereigns. Over the remainder of the group the French exercise a protectorate tantamount to possession. The nominal sovereign, Pomare, Queen of Tahiti, died Sept. 17, 1877.

Society for Psychical Research, a society founded in England in 1882 for the purpose of "making an organ-

ized attempt to investigate that large group of debatable phenomena designated by such terms as mesmeric, psychical, and spiritualistic." It has a membership of more than 900, with a branch in the United States with more than 500 members and associates.

Socinus, the Latinized name of two celebrated theologians, uncle and nephew, who have given their name to a religious sect, the Socinians, whose modified doctrines are now known as Unitarianism. Laelius Socinus (Lelio Sozzini), born in 1525 at Siena, in Tuscany, and destined for the legal profession, abandoned jurisprudence for the study of the Scriptures. In 1546 he was admitted a member of a secret society at Vicenza, formed for the discussion of religious questions, which arrived at the conclusion that the doctrine of the Trinity was untenable, and that many of the dogmas of the Roman Catholic Church were repugnant to reason. The nature of their deliberations having become known the society was broken up, several of its members put to death, and others, among whom was Socinus, fled the country. He visited France, England, Holland, etc., and resided for some time in Poland, where he found many persons who were in sympathy with his views. He died in Zurich in 1562.

Faustus Socinus (Fausto Sozzini), a nephew of the preceding; born in Siena in 1539, was obliged to leave that town in his 20th year on account of his heretical notions. On the death of his uncle he came into possession of the manuscripts of the latter, by the study of which he found his former opinions confirmed. He began to publish his views at Florence in anonymous writings, but afterward retired to Basel to escape the Inquisition. His opinions were still more fully developed during a residence in Transylvania, and in Poland he had numerous adherents. His death took place in 1604.

Sociology, the science of the evolution and constitution of human society. It has for its subject the origin, organization, and development of human society and culture, especially on the side of social and political institutions. Sociology embraces all social phenomena under their statical and dynamical aspects. It is the study of the conditions of existence and permanence of the social state; social dynamics studies the laws which govern the evolution of society. The field of Anthropology is usually restricted to the discussion of the earlier stages of social development and survivals from that stage into the present.

Sock (Latin, soccus), a low shoe or slipper worn by the Greeks, and also by the Roman women, who had them highly ornamented.

Socotra, an island in the Indian Ocean, 150 miles E. by N. from Cape Guardafui, and 220 from the S. coast of Arabia; 70 miles long by 20 broad; area, 1,380 square miles. The interior embraces numerous barren plateaus (1,500 to 2,000 feet), with several well-wooded mountains rising to 4,500 feet; there are fertile valleys between the ranges and belts of rich soil along the coasts. The climate is moist and warm, but healthy. The inhabitants, about 10,000 in all, belong to two distinct types — one with a comparatively light-colored skin and straight hair, the other darker with curly hair. But all speak the same peculiar language, which has certain affinities with the South Arabian dialect of Mahra. The people show traces of intermixture with Negro, Arab, and Indian tribes; and in ancient times the inhabitants of Socotra were believed to have been acquainted with Greek civilization.

Socrates, a great Athenian philosopher, the son of Sophroniscus and Phænarete; born near Athens in 469 B. C. He was brought up to his father's calling, that of a sculptor, and for a time gained his living by it. He was an eager student, and soon gave himself up entirely to philosophy. He led an active social life, married Xantippe, served his country as a soldier, and distinguished himself by his courage. His robust constitution made him indifferent to the extremes of temperature; he could dress alike and go barefoot all the year round. He appears to have scarcely ever held any political office and seems to have inclined rather to the aristocratic than the democratic party.

It was as a teacher that Socrates made himself the foremost man of Athens and perhaps of the ancient

world. He wrote no book, he did not establish a school or constitute a system of philosophy. But he almost lived abroad, and mixed with men familiarly, and in the street or any place of public resort, where listeners gathered round him, he talked and questioned and discussed, not for pay, but from the love of truth and a sense of duty. He was persuaded that he had a high religious mission to fulfill, and that a divine voice habitually interfered to restrain him from certain actions; and instead of encouraging profitless speculations on nature or the rhetorical charlatanry of the Sophists, he turned the thoughts of men to themselves, their actions, and their duties. Socrates was distinguished chiefly by his theory of virtue. Virtue, he said, consisted in knowledge. To do right was the only road to happiness; and as every man sought to be happy, vice could arise only from ignorance or mistake as to the means; instead of asserting and imparting, he questioned, and suggested, and showed, and led the way to real knowledge.

As early as 424 B. C. he was attacked by Aristophanes, in his comedy of the "Clouds" as the arch-sophist, the enemy of religion, and corrupter of youth; substantially the same charges as those on which he was prosecuted 20 years later. He was persecuted during the tyranny of the Thirty, and after their fall he was impeached by Anytus, one of their leading opponents, with whom were associated Melitus, a tragic poet, and Lycon, an orator. He was charged with not believing in the gods which the State worshiped; with introducing new divinities; and with corrupting the youth. Death was proposed as the penalty. Socrates defended himself in a tone of confident innocence and worthiness which aggravated the ill-will of his judges. He was condemned by a majority of six; but his additional speech in mitigation of the sentence raised the majority against him to 80. Thirty days elapsed between his sentence and its execution, in pursuance of the law that no criminal must be put to death during the voyage of the sacred ship, the "Theoris" to Delos with the annual offerings. During that period Socrates had the society of his friends and conversed with them as usual; the last conversation being on the immortality of the soul. He refused the offer of some of his friends to procure means of escape for him; drank the hemlock cup with perfect composure, and so died in the 70th year of his age in 399 B. C.

Soda, the protoxide of the alkaline metal sodium. It may be procured in an anhydrous state by burning the metal in dry air or oxygen. It is of a white color, greedily abstracting water from the air, which cannot be expelled by heat. In this state it forms hydrate of soda, or caustic soda.

Soda Water, a well-known beverage, which as usually prepared, is a supersaturated solution of carbonic acid gas in water. Soda water, properly called, consists of one, two, or three drachms of carbonate of soda, dissolved in a pint of water highly impregnated with carbonic acid. The mere aqueous solution of carbonic acid which is made by forcing the gas into water by a condensing pump and a pressure of six or eight atmospheres is an agreeable and harmless diluent.

Sodium, the alkaline metal of which soda is the oxide. It was discovered in 1807. It occurs in large quantities in nature, chiefly in combination with chlorine, as sea salt. It is also found united with oxygen in certain common minerals, such as albite, analcime, labradorite, and kryolite. It also occurs in the form of nitrate, carbonate, biborate, and sulphate. It is found in the ashes of plants, especially those which grow near the sea, such as the salsola soda. Sodium has lately become an article of commerce, in consequence of the demand which has arisen for it for the manufacture of aluminum. Chloride of Sodium constitutes the rock salt of commerce, or common table salt.

Sodom, one of the cities of the plain, and for some time the dwelling place of Lot. Its crimes and vices were so enormous that God destroyed it by fire from heaven, with three neighboring cities, Gomorrah, Zeboim, and Admah, which were as wicked as itself. The plain in which the doomed cities stood, was pleasant and fruitful, like an earthly paradise; but it was first burned, and afterward mostly overflowed by the waters of the Dead Sea or Lake of Sodom.

Sodom, Apple of, a fruit mentioned by early writers as growing on the shores of the Dead Sea, which was beautiful to the eye, but when eaten filled the mouth with ashes.

Soemmering's Gazelle, found in Eastern Abyssinia. It is about 30 inches high, sandy fawn above, with massive lyrate horns, which are more slender in the female.

Soft Grass (Holcus), a genus of grasses growing naturally in meadows, pastures, by waysides, etc., with a marked partiality for damp, peaty soil. It is of little value, for either hay or pasture, as cattle and horses have a decided aversion to it. The only quality recommending it to cultivation is that the roots serve to bind dry sandy slopes and embankments. Found in America and Great Britain.

Soil, that part of the disintegrated surface of the earth's crust in which the roots of plants ramify, and from which growing plants derive the mineral substances necessary for their proper development. Soils are formed by the disintegration of the rocks through the continued action of water and air at various temperatures, and by the accumulation of the decaying remains of vegetable organisms. Soils may be characterized by their prevailing primitive earths; hence, they are reduced to sands and gravels, clays, chalky and limestone soils, alluvial soil and peat bogs. Sandy soils are loose, never present a firm surface, and from being without cohesion are incapable of retaining moisture. Being readily permeable by both water and air, they powerfully promote the decomposition of organic matter, while they as readily permit it to be washed away by rains or to escape in the form of gas. One great advantage they possess is their natural warmth; and being loose and friable on the surface they are well adapted for the germination of seeds. Gravelly soils are more readily penetrated by rain, and more readily dried by filtration and evaporation, than sands. Clayey soil, relatively to water, is the very reverse of sand; relatively to heat, clays do not admit the atmosphere between their particles, and an unimproved clay soil is a cold one. Lime and chalk soil is much less common than either sand or clay. Alluvial soils are composed of very fine particles of the debris of several kinds of rocks, which have been held in suspension by water, and deposited in plains or along the banks of rivers, along with organic matter also held in suspension. Peat or bog is composed of partially decayed vegetable matter, soft, light, and spongy to the touch. It holds water like a sponge, so that in its natural state it is quite unfit for the growth of crops.

Soiree, properly an evening party held for the sake of conversation only; now applied to various kinds of evening parties, at which ladies and gentlemen meet, whatever may be the amusements introduced. The word is frequently employed to denote a meeting or reunion of the members of societies or bodies and their friends.

Sojourner Truth, an American abolitionist; born of slave parents in Ulster co., N. Y., about 1775; was sold to John J. Dumont when 10 years old; was freed by the act of the New York Legislature in 1817, but did not secure her liberty till 1827, when she escaped to New York city. In 1851, in company with other abolitionists, she began lecturing on women's rights, temperance, politics, and other questions concerning the welfare of her race. Her name was Isabella, but she adopted the name of "Sojourner," claiming to have heard it from the Lord. To this she added the word "Truth" to indicate that all she imparted to men was absolutely true. She died in Battle Creek, Mich., Nov. 26, 1883.

Sola, or **Shola,** a small half-floating papilionaceous bush found in marshes in Bengal, India, and growing most during the season of inundation.

Solanaceæ, or **Solaneæ,** a natural order of exogenous plants and shrubs, but including a few tropical trees. The plants of this order are mostly natives of tropical countries, a small number extending into the temperate climates; in the coldest regions they are entirely wanting. They are mostly distinguished by an offensive smell and by containing a narcotic, poisonous substance, usually associated with a pungent principle, and some of them are among the most active poisons known to man.

Solan Goose, the gannet, Sula bassana. They breed in immense numbers on the coasts of North America, Europe and South Africa.

Solanum, the nightshade; the typical genus of Solanaceæ. Herbs or shrubs, rarely trees. Flowers in or above the forks of the stem. Known species between 500 and 600, most of them from the tropics, others from temperate climes. S. tuberosum is the potato.

Solar Cycle, in chronology, a term applied to one of those artificial periods made use of in chronological researches. It comprehends a period of 28 years, compounded of 7 and 4, the number of days in a week, and the number of years in the interval of two leap years. This cycle remained undisturbed till the end of the 19th century; but in consequence of the year 1900 not being reckoned as a leap year, the whole cycle was thereby overthrown.

Solar Plexus, in anatomy, a nervous center at the upper part of the abdomen behind the stomach and in front of the aorta and the pillars of the diaphragm. It is the largest of the pre-vertebral centers. Called also the epigastric plexus.

Solar Star, the name given to those stars which from the spectrum analysis of their light are supposed to be in the same state of heat, etc., as our central sun is at the present time.

Solar System, the sun and all the bodies, by whatever name they may be called, which periodically revolve round the sun as a center. Visible to us are seven distinct orders or systems of revolving worlds. They are the zodiacal light, whatever that may be, the planetary, the satellitic, the meteoric, the cometary, the stellar, and the nebular systems. All but the latter two belong to our solar system. The limits of the planetary system, as far as known, are Mercury, the nearest to the sun, and Neptune, the most distant. The bodies as far as known that are denizens of our solar system are the sun (the center), the planets of Mercury, Venus, earth with one satellite, Mars with 2 satellites, 428 asteroids, Jupiter and 5 satellites, Saturn with 5 rings and 8 satellites, Uranus with 4, and Neptune with 1, also Halley's, Pons', and Olbers' comets of long period, and about 25 of short period, ranging from 3.3 years (Encke's) to 13.78 years, commonly called Tuttle's comet. To the list must be added 200 or more meteoric rings, which, while the earth is passing through them, produce the star showers. The next return of Halley's comet is calculated for about 1912; Pons', 1995; Olbers', 1960. Every member of the solar system, be it planet, satellite, meteoroid or comet, moves in an orbit called an ellipse, of greater or lesser eccentricity.

Solar Time, time as indicated by a sundial. The successive hours so indicated are not equal intervals of time.

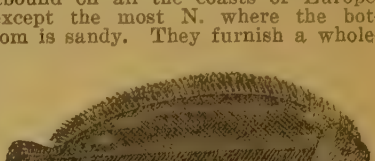
Solatium, in ordinary language, anything which consoles or compensates for suffering or loss; a compensation. In law, a sum of money paid over and above actual damages to an injured party, by the person who inflicted the injury, as solace for wounded feelings. In ecclesiology, an additional daily portion of food allotted to the inmates of religious houses under exceptional circumstances.

Solberg, Thorwald, an American copyright expert; born in Manitowoc, Wis., April 22, 1852; served on the staff of the Library of Congress in 1876–1889; was manager of the literary department of the Boston Book Company in 1889–1897; took an active part in the effort to secure an international copyright; was a member of the American Copyright League, the International Literary and Artistic Association of Paris, and in July, 1897, was appointed United States register of copyrights.

Solder, or **Soder,** a metal or alloy used to unite adjacent metallic edges or surfaces. It must be rather more fusible than the metal or metals to be united, and with this object the components and their relative amounts are varied to suit the character of the work. Hard solders are such as require a red heat to fuse them; they are employed for joining brass, iron, and the more refractory metals. Soft solders melt at a comparatively low temperature, and are used with tin and lead, of which metals they are wholly or in part composed.

Soldiers' Homes, institutions provided by National and State governments for the care of sick and disabled soldiers and sailors. The United States National Home for Disabled Volunteer Soldiers has branches at Dayton, O.; Milwaukee, Wis.; Togus, Me.; Hampton, Va.; Leavenworth, Kan.; Santa Monica, Cal.; Marion, Ind.; and Danville, Ill. The aggregate number of inmates is about 27,000. The requirements for admission are: (1) An honorable discharge from the United States service. (2) Disability which prevents the applicant from earning his living by labor. (3) Applicants for admission will be required to stipulate and agree to abide by all the rules and regulations made by the Board of Managers. Attention is called to the fact that by the law establishing the Home the members are made subject to the Rules and Articles of War, and will be governed thereby in the same manner as if they were in the army of the United States. (4) A soldier or sailor must forward with his application for admission his discharge paper, and when he is a pensioner, his pension certificate, and if he has been a member of a State Home, his discharge from that Home, before his application will be considered. Soldiers or sailors whose pensions exceed $16 a month are not eligible to the Home unless the reasons are peculiar and are explained to the manager and are satisfactory to him. Those who have been members of the State Homes must have been discharged from those Homes at least six months before they can be admitted to a branch of the National Home, except by a vote of the Board of Managers. Applicants are requested to conform strictly to the above requirements. The United States Soldiers' Home in the District of Columbia receives and maintains discharged soldiers of the regular army. All soldiers who have served 20 years as enlisted men in the army (including volunteer service, if any), and all soldiers of less than 20 years' service who have incurred such disability, by wounds, disease, or injuries in the line of duty while in the regular army, as unfits them for further service, are entitled to the benefits of the Home. There are State Homes for disabled volunteer soldiers provided by the States of California, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Vermont, Washington, Wisconsin, and Wyoming.

Sole (Solea vulgaris), a marine fish belonging to the flat fishes, of an oblong or oval form. These fish abound on all the coasts of Europe, except the most N. where the bottom is sandy. They furnish a whole-



COMMON SOLE.

some and delicious article of food. The name is given in America to flounders, somewhat resembling the true sole in form. The sole is at its worst from February to the end of March, this being the spawning season. It is usually captured by the trawl net.

Solea, the sole, or the under surface of the foot or hoof of an animal.

Solenhofen Beds, in geology, beds consisting chiefly of a fine fissile slate, used for lithographic purposes, found at Solenhofen and Eichstadt.

Solenostoma, in ichthyology, the sole recent genus of Solenostomidæ with two or three small species from the Indian Ocean. This genus is remarkable as being one of the two genera of fishes in which the care of the eggs and young is undertaken by the female, the other being the Siluroid genus Aspredo.

Solitaire, in ornithology, an extinct genus of Dididæ, with a single species; from the island of Rodriguez. It was described by Leguat in 1708 from personal observation, and prob-

ably survived till 1761. It was allied to the Dodo, but the neck and legs were longer, and the bird was more slightly built. They were formerly very abundant, and, being excellent eating, the early voyagers destroyed great numbers of them. The introduction of swine, which ran wild in the forests, and fed on the eggs and the young birds, completed their extermination.

Solomon (Hebrew, Shelomoh, the Prince of Peace), son of David, King of Israel, by Bathsheba, formerly the wife of Uriah, was appointed by David to be his successor in preference to his elder brothers. By his remarkable judicial decisions and his completion of the political institutions of David Solomon gained the respect and admiration of his people; while by the building of the temple, which gave to the Hebrew worship a magnificence it had not hitherto possessed, he bound the nation more strongly to his throne. The wealth of Solomon, accumulated by a prudent use of the treasures inherited from his father; by successful commerce; by a careful administration of the royal revenues; and by an increase of taxes, enabled him to meet the expenses of erecting the temple, building palaces, cities, and fortifications, and of supporting the extravagance of a luxurious court. Fortune long seemed to favor this great king; Israel scarcely perceiving that he was continually becoming more despotic. Contrary to the laws of Moses, he admitted foreign women to his harem; and from love of them he was weak enough in his old age to permit the free practice of their idolatrous worship and even to take part in it himself. Toward the close of his reign troubles arose in consequence of these delinquencies, and the growing discontent, coming to a head after his death, resulted in the division of the kingdom, which his feeble son Rehoboam could not prevent. The 40 years' reign of Solomon is still celebrated among the Jews, for its splendor and its happy tranquillity, as one of the brightest periods of their history. The writings attributed to Solomon are "The Book of Proverbs," "Ecclesiastes," and the "Song of Solomon," with the apocryphal book the "Wisdom of Solomon."

Solomon Islands, a group in the South Pacific; lying S. E. of New Britain and E. of New Guinea; extending in a S. E. direction between lat. 4° and 11° S., and long. 152° to 154° E. These islands were first discovered and explored by the Spanish navigator Mendana in 1568. He named them Solomon Islands on the imagined idea that the riches of Solomon's temple had been brought from them. While on his way to colonize them in 1595, he died, and the islands were not again visited till they were rediscovered by Carteret in 1767. They were visited several times during the latter part of the 18th century, and parts of the coast line of the larger islands were surveyed, but between 1794 and 1838, they became almost forgotten. After the latter date the survey of the coast was renewed, and both traders and missionaries endeavored to settle on the islands. There never has been any white settlement of any permanency on the islands. The Solomon group is composed of seven larger islands, and a great number of small ones, the area of the whole being estimated at about 10,000 square miles. The shores of the group are generally low, and bordered in some places with mangrove swamps, but several of the islands are traversed in the interior by mountains of considerable height. Numerous streams flow from the hills and the tropical atmosphere is cooled with abundant rains. The soil is very fertile. The islands are mainly inhabited by negrillos though there are some Malays in the N. part. Of their manners and customs very little is known. They are broken into numerous clans which are almost constantly at war. In accordance with the Anglo-German agreement of 1899 the islands of Choiseul and Isabel, with their surrounding islets, were transferred to Great Britain, Germany retaining the islands of Bougainville and Buka.

Solomon's Seal, the common name of plants of the genus Polygonatum. They are perennial, the stems rising from knotted rootstalks; flowers white or greenish. Common in the Eastern United States and Europe.

Solomon's Song, called also the Song of Songs, or Canticles, one of the canonical books of the Old Testa-

ment. From the earliest period this book has been the subject of voluminous controversies. It seems to have been a recognized part of the Jewish canon in the time of Jesus. Modern critics attribute it to an author of Northern Israel, who wrote it about the middle of the 10th century B. C., shortly after the death of Solomon, in a spirit of protest against the corrupt splendor of the court of Zion. The unity of the poem is sufficiently evidenced by the continuity of names, characters, and subject. The main subject of dispute has been as to its interpretation. The various theories in regard thereto naturally fall into two classes, the literal and allegorical. The highest form of allegorical significance contended for is the mystical or spiritual interpretation, by which the whole poem becomes a figurative representation of the hopes and aspirations, together with the trials and difficulties, of a spiritual life. This interpretation, whether applied individually or collectively to the Church or nation of Israel, was almost universally received both by Jews and Christians till recent times. The most favored literal interpretation is that originally given by Jacobi, that the poem represents the temptation and triumph of virtuous love.

Solon, one of the seven sages of Greece, and the celebrated legislator of Athens; born in Salamis, in the 7th century B. C. He was chosen archon 594 B. C., and having received full power to do whatever he judged needful, he set himself to the task of improving the condition of his countrymen. He formed a new constitution founded on the principle of making property, not birth, the title to the honors and offices of the State. He made many special laws also relating to trade and commerce, marriage, disposition of property by will, etc., and is said to have bound the Athenians by an oath not to make any changes in his code for 10 years. He then left the country, to avoid being obliged to make any alteration in them, and visited Egypt, Cyprus, and Lydia. On his return, after an absence of 10 years, he found the State torn by party violence, and his kinsman Pisistratus aiming at the sovereignty, which he soon seized. Solon then withdrew from public life and is supposed to have died at the age of 80, about 558 B. C.

Solor Islands, a group of four East Indian islands, lying E. of Flores. Solor, area, 105 square miles; pop. 15,000; Adanara, area, 302 square miles; Lomblem, area, 520 square miles; Pantar, area, 275 square miles. The first three are inhabited by Malays, most of whom are Mohammedans; Pantar, by Papuans. Adanara is independent; the Dutch hold the others.

Solstice, in astronomy, the time when the sun is at its greatest distance from the equator — and is so called because he then appears to stand still, and not to change his distance from the equator for some time. There are two solstices in each year — the summer and the winter solstice. The former is when the sun seems to enter the tropic of Cancer, which is on June 21, the longest day; the latter solstice is when the sun enters the tropic of Capricorn, which is on Dec. 22, the shortest day. This is only to be understood of the Northern Hemisphere, as in the Southern the sun's entrance into Capricorn makes the summer solstice, and into Cancer the winter solstice.

Sommers, Richard, an American naval officer; born in Egg Harbor, N. J., in 1778; was appointed to the navy in April, 1798, and sailed from Philadelphia in the frigate "United States" in July following, along the E. coast to the West Indies in search of French cruisers. In the war with Tripoli he was appointed to command the schooner "Nautilus" under Preble and was the first to arrive at Gibraltar; was promoted commander Feb. 16, 1804; proposed to destroy the Tripolitan fleet by exploding the "Intrepid" in its midst; and was killed in the attempt, Sept. 4, 1804.

Somnambulism, literally, the act or practice of walking in sleep; but, in a wider and more usual sense, that state of sleep or unconsciousness in which the mind retains its power over the limbs, but has no influence over its own thoughts.

Somnus, in Roman mythology, the son of Erebus and Nox, and one of the infernal deities, who presided over sleep. According to Hesiod his palace

is a dark cave where the sun never penetrates. At the entrance are a number of poppies and somniferous herbs. The god himself is represented as asleep on a bed of feathers, with black curtains. The Dreams stand by him, and Morpheus, as his principal minister, guards his slumbers from interruption.

Sondeli, the Sorex murinus, a species of shrew mice, also named the muskrat. It exudes a strong odor of musk from the inguinal or abdominal glands. Though named "muskrat," it is not a true rat.

Song, a little poem intended to be sung. The term is applied to either a short poetical or musical composition, but most frequently to both in union.

Sonnet, a species of poetic composition, first brought into notice by Petrarch, and consisting properly of 14 iambic verses of 11 syllables. It is divided into two chief parts, each consisting of two divisions — in the former, each compromising four lines (quatrain); in the latter, three (terzina). The sonnet generally contains one principal idea pursued through the various antitheses of the different strophes, and adorned with the charm of rhyme.

Sonora, a frontier State in the N. W. of Mexico; on the Gulf of California; is the second largest in the republic; area, 77,526 square miles. The coast is flat and sandy, the interior filled with wooded mountains and fertile valleys. The climate is hot, but in the mountains there is frost for five months in the year. The principal wealth of the State is in its minerals, especially gold, silver, mercury, and iron. Pop. 191,281. Capital, Hermosillo.

Sons of America, Patriotic Order of, a society first organized in Philadelphia in 1847, as the "Junior Sons of America," and afterward reorganized under its present name. Its objects are principally patriotic and benevolent, and its membership is confined to male persons "born on the soil or under the jurisdiction of the United States of America."

Sons of Liberty, an association of the colonists of North America, called into existence by Lord Grenville's "Stamp Act." They combined to throw off the allegiance to Great Britain and make North America independent. The association began in New York and Connecticut. The term "Sons of Liberty" was suggested by a speech of Colonel Barre's. Also a secret organization opposed to the prosecution of the war for the maintenance of the Union (1861–1865). It was suppressed by military commission in 1864.

Sontag, Henrietta, a German soprano singer; born in Coblentz, Prussia, May 13, 1805. Henrietta was the favorite of the Berlin stage before she was 18. She soon rose to the foremost place among European vocalists. About 1830 she married Count Rossi, a Piedmontese nobleman, and left the theater. But she never lost her love for her art, and continued to make progress as an artist in the midst of all the enjoyments of high life. After a happy union of nearly 20 years her husband lost his fortune. Without hesitation she resolved to have recourse to her art. She sang for several seasons in Europe, and came to the United States in 1852. After a brilliant and successful tour through the Union, she accepted a tempting offer from Mexico, where she was cut off by cholera, June 17, 1854.

Sonthals, an aboriginal hill tribe found in Southern Bengal, India, who have attracted considerable attention. They are a nomad race, with little affection for home, but a strong reverence for mountains and rivers. They supply a large portion of the hired labor of the plains. In 1855, owing to the exactions of Hindu landlords and money-lenders, they broke into an armed rebellion which required to be repressed by vigorous measures. At the same time the tract where they are most numerous was formed into a new district, called the Sonthal Pergunnahs; area, 5,488 square miles; pop. 1,259,287. The district of the Sonthals covers the Rajmehal hills, and is also peopled by another aboriginal tribe of Pahariya Mals.

Soot, a black substance formed by combustion, or disengaged from fuel in the process of combustion, rising in fine particles and adhering to the sides of the chimney or pipe conveying the smoke. The soot of coal and that

of wood differ very materially in their composition, the former containing more carbonaceous matter than the latter. Coal soot contains substances usually derived from animal matter; also sulphate and hydrochlorate of ammonia; and has been used for the preparation of the carbonate.

Sophia, Empress of Constantinople, niece of Theodora, and wife of Justinian II., with whom she shared in the government of the state. After the death of that prince in 578 she conspired against Tiberius Constantine, who had been raised to the throne by her advice, and, being defeated by him, was compelled to live in privacy.

Sophia, half-sister of Peter the Great, and Czarina of Russia; born in 1667; in 1682 she placed herself at the head of the revolt of the Strelitz. Having succeeded in her ambitious designs, she reigned over the Muscovites under the names of her brothers, Peter and Ivan. The former (Peter the Great) finally possessed himself of the sole power; and Sophia died a prisoner in a convent in 1704.

Sophia, Church of St., in Constantinople, the most celebrated ecclesiastical edifice of the Greek Church, now used as a mosque; was built by the Emperor Justinian, and dedicated in 558. It is in the Byzantine style of architecture, has a fine dome rising to the height of 180 feet, and is richly decorated in the interior. The mass of the edifice is of brick, but is overlaid with marble; the floor is of mosaic work, composed of porphyry and verd antique. The great piers which support the dome consist of square blocks of stone bound with hoops of iron. The numerous pillars supporting the internal galleries, etc., are of white and colored marbles, porphyry, granite, etc., and have capitals of various peculiar forms. The interior of the church is 243 feet in width from N. to S., and 269 in length from E. to W.

Sophists. The Greek word sophistes (from sophos="skilled," "wise") meant originally any one of acknowledged or professed skill; thus, the term was applied to the seven sages, to poets, musicians, etc. In the 5th and 4th centuries B. C. it came to be applied specially to those who made a profession of teaching all or any of the higher branches of learning. The great intellectual awakening of Athens after the Persian War, and the growth of democracy, in Sicily and elsewhere, as well as at Athens, which gave skill in public speaking a new importance, led to the demand for an education which should go beyond the old training in "gymnastic" and "music." To meet this demand there arose a class of professional teachers, wandering scholars, who undertook to provide what we should call "higher education." This new movement presents certain resemblances to the rise of the universities in the 13th century, to the popularizing of learning and science in the 18th and 19th centuries, to the "University Extension" movement of today. Some of the "Sophists" were more specially teachers of rhetoric. Other Sophists gave more attention to the matter of public speech, and in this way they were the beginners of moral and political philosophy. The ambitious youth of Athens flocked to a fashionable Sophist from intellectual interest in the new learning and in order to acquire an education which would fit them to obtain success in the law courts and in the popular assembly, or to acquit themselves with distinction in a discussion on any subject whatever. The various Sophists naturally differed much from each other in ability, in character, and in the degree of seriousness with which they regarded their function as teachers; and some may very well have deserved the censure expressed in Aristotle's definition of the Sophist as "a man who makes money by sham wisdom." The very opinions maintained by certain Sophists reappear in more fully developed forms among English and French writers of the 17th and 18th centuries. Much of the teaching of the Sophists was undoubtedly destructive of the old fabric of Greek belief and of Greek society, which rested on the narrow basis of an exclusive citizen caste with a substructure of slavery. The modern student will not necessarily think the worse of the Sophists on that account; though the majority of them were probably by no means con-

scious of the significance of the critical weapons they handled. By raising problems in almost every department of thought for which they could find no satisfactory answers, they prepared the way for the great period of Athenian philosophy. In later times the term "Sophist" came into reputation again; and some of the Greek professors of rhetoric under the Roman empire were described as Sophists on their tombs.

Sophocles, a Greek tragic poet; born in the Attic demus or village of Colonus, 495 B. C., 30 years later than Æschylus. He received a good education, and at an early age gained the prize in music and gymnastics. He was 15 when the battle of Salamis was fought, and for his remarkable beauty and skill in music he was chosen to lead the chorus which sang the pæan of victory. His first appearance as a dramatist was in 468, when, under memorable circumstances, he had Æschylus for his rival and won the victory. The number of plays attributed to him without question was 113, of which 81 were probably produced after the "Antigone." Seven only are extant, viz., "Antigone," "Electra," "Trachinian Women," "King Œdipus," "Ajax," "Philoctetes," and "Œdipus at Colonus." These exhibit his art in its maturity, and sustain the verdict of ancient and modern critics that Sophocles carried the Greek drama to its highest perfection. Sophocles lived to be nearly 90, and in his latest years most probably wrote the "Œdipus at Colonus," so full of sweetness and tender melancholy, and consoling hopes, which was not presented on the stage till five years after the poet's death, 406 B. C.

Sorghum, is the Indian or great millet, or guinea corn. It is an annual cane-like cereal, bearing a dense head of spikelets, with small corn-like seeds. In India it forms with rice and wheat the chief staple of the country, but is considered heating. Bread, porridge, etc., are made from it; its seeds when crushed constitute an auxiliary food for cattle, sheep, horses, swine, and poultry. Some varieties of sorghum are cultivated in the Northern United States and in Canada.

Sorosis, in botany, a collective fruit, formed of a number of separate flowers, firmly coherent in a fleshy or pulpy mass with the thalamus on which they are situated. The pine-apple is an example; each hexagonal division represents a flower, while the crown of leaves above consists of empty bracts. The breadfruit, jack-fruit, and mulberry are examples.

Sorosis, the name of the first women's club in the United States, founded by Mrs. "Jenny June" Croly and some of her associates, in New York city, in 1868.

Sorrel, a dicœcious plant, having the lower leaves sagittate, the upper ones sessile, the outer fruiting sepals reflexed, the inner enlarged, orbicular, quite entire, scarious, tubercled at the base. Found in meadows and pastures. It contains a large quantity of binoxalate of potash. The leaves are used as a salad and a potherb, and in decoction as a febrifuge.

Sorrel Tree, a tree belonging to the natural order Ericaceæ. It inhabits the range of the Alleghanies from Virgina to Georgia. The leaves are four or five inches long, oval-acuminate, finely toothed, and strongly acid in taste. The flowers are small, white, and disposed in long one-sided racemes, clustered in an open panicle.

Sosigenes, a philosopher who aided Julius Cæsar in reforming the calendar in the year 46 B. C.

Soul. In Scripture and theology the word soul is used chiefly for "that spiritual, reasonable, and immortal substance in man which is the origin of our thoughts, of our desires, of our reasonings, which distinguishes us from the brute creation, and which bears some resemblance to its Divine Master" (Cruden). All Christians admit the responsibility of the soul to God for the deeds done in the body; and the orthodox view — that of the Anglican, Roman, and Greek Churches and of the great dissenting bodies — is that at the final judgment the lot of every soul will be irrevocably fixed, and that it will either eternally enjoy the Beatific Vision in heaven or share the endless torments prepared for the devil and his angels. Two other views — both of which have found supporters in the Church from

early ages — are coming increasingly to the front: (1) That of the Restorationists, of whom there are two schools: (a) the Dogmatic, who assert, and (b) those, represented by Archdeacon Farrar, who express a hope that all men will be finally saved; and (2) the Annihilationists or Destructionists, who hold that while the righteous will be forever in a state of bliss, the wicked, after receiving the punishment of their sins, will be blotted out of existence. Origen, with Plato, held the doctrine of the preëxistence of souls, which was condemned by a synod at Constantinople in 543. Two distinct views have at different times found supporters in the Christian Church: (1) That the soul is produced by natural generation; (2) that each soul is separately created by God.

Soule, Pierre, an American statesman; born in Castillon, France, in September, 1802. He went to Paris in 1824, where he became editor of "Le Nain Jaune" ("The Yellow Dwarf"), a paper noted for its extreme liberal ideas. For the publication of a bitter article attacking the ministers of Charles X. he was sentenced to imprisonment, but escaped and arrived in Baltimore, Md., in 1826. Subsequently he went to New Orleans. In 1847 he was appointed to the United States Senate and elected to a full term in that body in 1849. Later he was sent on a mission to Spain with the object of negotiating for the acquisition of Cuba by the United States; and in 1854 was one of the ministers who framed the famous "Ostend Manifesto." Up to the time of Abraham Lincoln's election he had advocated secession, but thereafter favored cooperation. On the passage by the Southern States of the ordinances of secession, he tendered his services to the Confederate government, and in 1862 became an honorary aide on the staff of General Beauregard. At the close of the war he returned to New Orleans and practiced law till his death there, March 26, 1870.

Sound, strictly the sensation which results from the stimulating action of atmospheric or other vibrations upon the aural nerves. Beyond ourselves it has no existence, it is purely subjective, and as a sensation must be carefully distinguished from the vibratory motion which is one of the necessary conditions of its existence. Further, the existence of this vibratory motion is itself conditioned by two things — a distributing cause and a suitable medium for transmitting the disturbance to the ear. The study of these in all their possible relations constitutes the science or theory of sound. As far as the physics of the subject is concerned, it is immaterial what the nature of the medium is, provided it is elastic enough to vibrate; physiology, however, demands that the medium be fluid, otherwise the transmission of the vibrations to the organs of hearing would be impossible. Sounds are usually classified under two heads of noises and musical sounds. A musical sound is caused by a regular series of exactly similar disturbances or pulses succeeding each other at precisely equal intervals of time; if these conditions are not fulfilled, the sound is a noise.

Sounding, the operation of trying the depth of water and the quality of the bottom, especially by means of a plummet sunk from a ship. In navigation two plummets are used, one called the hand lead, weighing about eight or nine pounds; and the other, the deep sea lead, weighing from 25 to 30 pounds (see Lead). The former is used in shallow waters, and the latter at a distance from shore. The nature of the bottom is commonly ascertained by using a piece of tallow stuck upon the base of the deep-sea lead, and thus bringing up sand, shells, ooze, etc., which adhere to it.

Sounding Board, in a pianoforte, a piece of wood, usually the best Swiss fir, placed behind the strings in order that the resonance may be increased. The term is also applied to a wood screen placed behind a speaker in halls and churches for acoustic purposes.

Soup. As a general rule soup is made by boiling meat or vegetables in what is called "stock." To prepare the latter the cook obtains fresh meat, bones, and vegetables such as carrots or leeks, and after the addition of salt allows them to simmer for some hours

in sufficient water. The stock is the infusion thus prepared, and contains small quantities of starch, if vegetables have been used, and in any case some gelatine, which will often cause it to solidify on cooling. Together with a small quantity of nourishment, the infusion has extracted from the meat and vegetables those pleasant flavored extractives which give it taste. Taking this stock as a basis, the various soups are made by boiling with it the bones and flesh of the hare, ox tails, etc., and vegetables such as carrots, potatoes, turnips, rice, sago, etc.

Soursop, a West Indian fruit tree The tree does not attain a large size, but is much branched and very ornamental. The fruit is very large, often weighing two or three pounds; its pulp is white, succulent, sweet, with an agreeable acidity. The soursop is a pleasant and refreshing fruit, and is very much used in the West Indies, being produced in great abundance.

Sousa, John Philip, an American musician; born in Washington, D. C., Nov. 6, 1854; studied music, and was leader of a band when only 17. He was band leader of the United States Marine Corps, 1880–1892, and in the latter year organized the famous Sousa Band, which gave concerts in England, France, Germany, and all over the United States. He composed numerous songs, waltzes, operas, and orchestral suites, but was best known from his marches, which were republished throughout Europe.

Southampton, a borough and seaport town of England, in the county of Hants, on a peninsula at the mouth of the Itchen, near the head of Southampton Water, 18 miles N. W. of Portsmouth, and 79 miles S. W. of London. It is built on rising ground, and consists of an old and a new town, the former at one time surrounded by walls flanked with towers, of which portions still remain; and entered by several gates. There is ample dock accommodation, and Southampton is the most important mail packet station in the kingdom. The manufactures are chiefly confined to brewing, coach building, iron casting, sugar refining, and shipbuilding. Southampton claims to be a borough by prescription, but its earliest known charter was granted by Henry II. Pop. (1901) 103,500.

South Carolina, a State in the South Atlantic Division of the North American Union; bounded by North Carolina, Tennessee, Georgia, and the Atlantic Ocean; one of the original 13 States; number of counties, 40; capital, Columbia; area, 30,170 square miles; pop. (1890), 1,151,149; (1900) 1,340,316.

The State has a seaboard of 210 miles, and running W. from this is a low, sandy, and in places, marshy plain, from 80 to 100 miles wide. Beyond this plain is what is known as the middle country, consisting of low sand hills. A series of terraces rises W. of this and terminates in the Blue Ridge Mountains, passing through the N. W. of the State. In 1900 the principal mineral productions were gold, 5,854 fine ounces, valued at $121,000; silver, 400 fine ounces, valued at $248; phosphate rock, 329,173 long tons, valued at $1,041,970; mineral waters, 352,208 gallons, valued at $37,046; granite, valued at $500,802; limestone, $38,415; and clay products $605,229. The State ranks next to Florida in the production of phosphate rock.

The soil is as a rule either loam or clay, rich in phosphate, lime, and potash. Cotton, maize, wheat, rice, and sweet potatoes are the chief staples. The magnolia and palmetto grow abundantly along the coast, pine and cypress characterize the low country, and hardwoods the highlands. The cotton crop in 1900 was 830,714 bales, that of the Sea Islands being of especially fine quality.

According to the United States census of 1900 the State had 3,762 manufacturing establishments, employing $67,356,465 capital and 49,662 persons; paying $10,782,952 for wages and $34,027,795 for materials used; and having a combined output valued at $58,748,731. The principal industries according to the value of output were cotton manufactures, lumber and timber products, fertilizers, cottonseed, oil and cake, flour and grist mill products, planing mill products, rice cleaning and polishing, turpentine and rosin, railroad cars, cotton ginning, and brick and tile.

At the end of the school year 1899–1900 there were reported 497,760 children of school age; enrollment in public schools, 281,891. For higher education there were 99 public high schools, 31 private secondary schools, 1 public, and 4 private normal schools, 9 colleges for men and for both sexes, and 9 women's colleges.

State Government.— The governor is elected for a term of two years and receives a salary of $3,000 per annum. Legislative sessions are held annually beginning on the second Tuesday in January, and are limited in time to 40 days each. The Legislature has 41 members in the Senate and 124 in the House. There are 7 Representatives in Congress.

South Carolina was the first State to secede from the Union, on Dec. 20, 1860. The first hostile act in the Civil War was the bombardment of Fort Sumter, in April, 1861. During the war the State suffered greatly, her harbors were blockaded, and much property was destroyed by the Federal soldiers on the great march under General Sherman. In 1865 the ordinance of secession was repealed and slavery abolished. A new constitution, establishing perfect equality between the white and the colored races, was adopted in 1869; and in the same year the ratification of the 15th Amendmend to the Constitution of the United States being carried by a vote of 18 to 1 in the Senate and 88 to 3 in the House, the State was readmitted to representation in Congress.

South Carolina College, a coeducational non-sectarian institution in Columbia, S. C.; founded in 1801.

South Dakota, a State in the North Central Division of the North American Union; bounded by North Dakota, Minnesota, Iowa, Nebraska, Wyoming, and Montana; admitted to the Union, Nov. 2, 1889; number of counties, 78; capital, Pierre; area, 76,850 square miles; pop. (1890) 328,808; (1900) 401,570.

The surface of the E. portion of the State is a level plain, including the great plateau of the Missouri and a similar plateau E. of the James river. W. of the Missouri river the surface is broken, and contains the Black Hills, averaging 6,000 feet in height. The Black Hills contain some of the most valuable mineral deposits in the United States. In 1900 the principal mineral productions were gold, 298,842 fine ounces, valued at $6,177,600; silver, 536,200 fine ounces, valued at $332,444; mineral waters, valued at $62,189; granite, $114,115; sandstone, $12,675; limestone, $47,762; natural gas, $9,817; portland cement, $76,000; clay products, $46,500; and mica, sheet, 123,090 pounds, scrap, 258 short tons.

The soil is a light but rich loam overlying a fertile clay subsoil, and is especially adapted to raising cereals. Wild fruits grow in great abundance, rich grass covers the prairies in the E. and the Black Hills and Bad Lands afford excellent advantages for dairy farming and stock raising. The principal farm crops are corn, wheat, oats, barley, potatoes, and hay.

According to the United States census of 1900 the State had 1,639 manufacturing establishments, employing $7,578,895 capital and 3,432 persons; paying $1,728,642 for wages and $7,827,110 for materials used; and having a combined output valued at $12,231,239. The most important products according to the value of output were flour and grist, and cheese, butter, and condensed milk.

At the end of the school year 1899–1900 the children of school age numbered 124,404; enrollment in public schools, 98,822. For higher education there were 39 public high schools, 7 private secondary schools, 4 public and 1 private normal schools, and 8 colleges.

The governor is elected for a term of two years and receives a salary of $3,000 per annum. Legislative sessions are held biennially in odd years, beginning on the Tuesday after the first Monday in January, and are limited in time to 60 days each. The Legislature has 45 members in the Senate and 87 in the House. There are two Representatives in Congress.

The country now known as the Dakotas was acquired by the United States as a part of the Louisiana Purchase. In 1883 a convention to frame a State constitution for Dakota met at Sioux Falls. Dissensions between the people of the two sections of the Territory followed, and in 1888 it was decided to divide the territorial area

into two States, under the names of North and South Dakota. The bill for their admission passed Congress and was signed by the President, Feb. 22, 1889.

South Dakota, University of, a coeducational non-sectarian institution in Vermillion, S. D., founded in 1883.

Southern California, University of, a coeducational institution in Los Angeles, Cal., founded in 1880 under the auspices of the Methodist Episcopal Church.

Southey, Robert, an English poet; born in Bristol, England, Aug. 12, 1774. In 1801 he devoted himself to literature, and soon after took up his residence at Keswick, in Cumberland, where the remainder of his life was passed, he being thenceforth classed as one of the Lake poets. In 1807 he obtained a pension from the government, and on the death of Pye was appointed poet laureate. The latter years of his life were clouded by a mental imbecility which attended him to his death. His chief poems are: "Joan of Arc," "A Vision of Judgment," etc. Among his prose works are: "History of Brazil," "Life of Nelson." Among his translations was "The Chronicle of the Cid." His "Commonplace Book," a posthumous publication in four volumes 8vo, is a marvelous monument of his reading and research. He died near Keswick, England, March 21, 1843.

South Georgia, a group of islands in the South Atlantic Ocean, uninhabited, and almost perpetually icebound; nearly 800 miles E. by S. of the Falkland Isles, of which they are a dependency; area, 1,000 square miles. Discovered in 1675, they were taken possession of by Captain Cook in 1775; and here in 1882–1883 lived the German expedition for observing the transit of Venus.

South Sea, the Pacific Ocean. The name was bestowed by Vasco Nunez de Balboa, in 1513, because from the spot where he obtained his first view of the great expanse of water, only its S. aspect was visible. The name is still often applied in literature, though with special reference to that part S. of the equator.

South Shetlands, a group of islands in the Antarctic Ocean S. of South America, on the Antarctic circle; originally discovered by a Dutch seaman named Dirk Cherrits in 1599. The islands are uninhabited, and covered with snow the greater part of the year.

Southwell, Robert, an English poet; born about 1562. In 1592 he was arrested on a charge of conspiracy against Queen Elizabeth's government, and imprisoned in the Tower for three years. Though 13 times cruelly tortured, he confessed only his efforts to make converts to Romanism. He was tried, found guilty, and hanged at Tyburn, Feb. 22, 1595. His longest poem is "Saint Peter's Complaint"; his most famous, "The Burning Babe."

Southwestern Baptist University, a coeducational institution in Jackson, Tenn., founded in 1845 under the auspices of the Baptist Church.

Southwestern University, a coeducational institution in Georgetown, Tex.; founded in 1873 under the auspices of the Methodist Episcopal Church.

Sovereign, a gold coin, the standard of the English coinage. It equals 20 shillings sterling, and has a standard weight of 123.247 grains, being of 22 carats fineness, and coined at the rate of 1,869 sovereigns from 40 pounds troy of gold; worth in United States money $4.8665.

Sow, in founding, the main trough leading from the tap hole of a cupola or smelting furnace, and from which ramify the passages leading to the separate molds in casting, or to the shallow ditches in the floor which receive the pigs of cast metal. Also the piece of metal cast in this trough; an oblong mass of metal. In military language, a structure of the nature of a movable covered shed, formerly used in sieges to cover and protect men who were employed in carrying on sapping and mining operations.

Sow Thistle, the popular name given to a species of a genus of composite plants. There are about 50 species, mostly herbaceous, but some forming shrubs or small trees. Some of the first may be considered cosmopolitan, while the woody sorts are almost restricted to the Canaries and to the island of Madeira. One species

is found in Massachusetts and Southern New York.

Spade, an implement for digging. The spade or fork is thrust in with the foot, and the mass of earth is first loosened by the lever-power of the handle, then lifted and inverted. Digging by hand is mainly confined to the cultivation of gardens and small "crofts," for, though a most efficient means of cultivating the soil, it is too expensive for field crops. Formerly the spade was the only implement used for digging, but steel forks are now more largely used, being lighter and more easily driven into the soil. Besides preparing the land for plants, the spade and the fork, chiefly the latter, are used for taking crops, such as potatoes and carrots, out of the ground.

Spain, a kingdom in the S. W. of Europe, forming with Portugal the great S. W. peninsula of Europe. It is separated from France on the N. E. by the chain of the Pyrenees, and is otherwise bounded by Portugal and the Atlantic and Mediterranean. In greatest breadth N. and S. it measures 540 miles; greatest length E. and W., 620 miles; total area, 191,100 square miles; population estimated, 18,089,500. Spain retains practically none of her once magnificent colonies. The war with the United States deprived her of Cuba, Porto Rico, the Philippine and Sulu islands, and Guam; and a treaty with Germany, Feb. 8, 1899, of the Marianne (or Ladrone), Caroline, and Pelew islands. On Nov. 8, 1900, Spain sold the islands of Cagayan and Sibutu to the United States for $100,000. Her last remaining colonies are in Africa with pop. 136,000.

The coast line is not much broken, but sweeps round in gentle curves, presenting few remarkable headlands, or indentations. The interior is considerably diversified, but its characteristic feature is its central tableland, which has an elevation of from 2,200 to 2,800 feet, and a superficial extent of not less than 90,000 square miles. It descends gradually on the W. toward Portugal; but on the E., toward the provinces of Catalonia and Valencia, it presents an abrupt steep or line of cliffs, with the character of an ancient sea margin. It is bounded on the N. by the Asturian and Cantabrian Mountains, reaching an elevation of about 8,500 feet and on the S. by the Sierra Morena. Besides these ranges there is the chain of the Pyrenees, which, though partly belonging to France, presents its boldest front to Spain and has its loftiest summits within it.

The whole country teems with mineral wealth, the minerals including in greater or less quantities gold, silver, quicksilver, lead, copper, iron, zinc, calamine, antimony, tin, coal, etc. The exploitation of the minerals has, however, in recent times been mostly accomplished by foreign capital, while most of the ore is exported to foreign countries in its raw state. In 1900 the value of the mineral production was $57,714,681.44; and the value of the minerals at the mines, $26,914,274.65. The most important mineral was iron ore, total value $5,406,632.29.

About one-sixth of the acreage is under wood; the more remarkable trees being the Spanish chestnut and several varieties of oak, and in particular the cork oak. Fruits are extremely abundant, and include, in addition to apples, pears, cherries, plums, peaches, and apricots, the almond, date, fig, orange, citron, olive, and pomegranate; and in the lower districts of the S., the pineapple and banana. The culture of the vine is general, and great quantities of wine are made, both for home consumption and exportation. The more important farm crops are wheat, rice, maize, barley, and legumes. In the S. cotton and the sugar cane are grown. Hemp, flax, esparto, the mulberry for rearing silk worms, saffron, licorice, are also to be mentioned.

The manufactures of Spain are not as a whole important, but considerable advances have been made in recent times. The most important industries are the manufacture of cotton, woolens and linens, cutlery and metal goods, paper, silk, leather, tobacco, and cigars, besides wine, flour, and oil. Since the loss of her colonies, most of Spain's manufacturing interests have suffered severely. The chief articles of export are wine (by far the first), fruits (especially oranges and raisins), cork, lead, iron ore, oils,

soap, and agricultural produce (including cattle and wool. The chief foreign trade is with France.

By the constitution of 1876 Spain was declared a constitutional monarchy, with executive power vested in the king, and the legislative power in the Cortes with the king. The Cortes consists of a Senate and Congress. The Senate is composed of three classes: Those who sit by right of birth or official position, members nominated by the crown (these two classes not numbering more than 180 together), and 180 elected by the largest taxpayers of the kingdom and certain corporate bodies. The Congress contains 431 deputies, elected by citizens of 25 years of age who have enjoyed full civil rights in any municipality for two years.

The people of Spain are of very mixed origin, the most ancient inhabitants, the Iberians (now represented probably by the Basques or Biscayans of the N. E.), being afterward mingled with Celts, Phœnicians, and Carthaginians, Roman colonists, Goths, Jews, and Arabs or Moors. Under the constitution the State binds itself to maintain the Roman Catholic religion, but a restricted liberty of worship is permitted to Protestants, of whom, however, there are very few.

Spain was first known to the Phœnicians, subsequently to the Carthaginians, and, in the 3d century B. C., to the Romans. A very eventful history followed, Spain at one time occupying a prominent part in the general affairs of Europe. Later, however, her prestige declined. In 1873 a republic was formed, with Castelar as its leading spirit, but it was soon brought to an end, and the throne was offered in 1874 to Alphonso, the young son of a former exiled Queen, Isabella. Alphonso XII. died in 1885; and on the birth of a posthumous son, May 17, 1886, the regency was intrusted to his widow, Christina. In 1902 this son came to the throne under the title of Alphonso XIII. His reign has been marked by the loss of Spain's colonial possessions, as a result of the Spanish-American War, and by industrial and anarchist disturbances. In October, 1903, an anarchist plot to blow up the Cortes was discovered and frustrated.

Spalding, John Lancaster, an American clergyman; born in Lebanon, Ky., June 2, 1840; was educated at St. Mary's College, Emmetsberg, Md., in Belgium, and in Rome; was chancellor of the diocese of Louisville, Ky., in 1871; was Roman Catholic Bishop of Peoria, Ill., after 1877. He did much to establish educational institutions in this country.

Spalding, Martin John, an American clergyman; born near Lebanon, Ky., May 23, 1810; was graduated at St. Mary's College in 1826, and in 1830 entered the College of the Propaganda in Rome; was ordained priest in 1834; became Roman Catholic Bishop of Louisville, Ky., in 1849, and Archbishop of Baltimore in 1864. In 1866 he was apostolic delegate and convened the Second National Council of the Roman Catholic Church at Baltimore; and was a prominent member of the Vatican Council (1870–1871). He was distinguished as a controversialist and polemical writer, and published many works. He died in Baltimore, Feb. 7, 1872.

Spaniel, the name given to several varieties or breeds of dogs. Their distinguishing characteristics are a rather broad muzzle, remarkably long and full ears, hair plentiful and beautifully waved, particularly that of the ears, tail, and hinder parts of the thighs and legs. The prevailing color is liver and white, sometimes red and white or black and white, and sometimes deep brown, or black on the face and breast, with a tan spot over each eye. The English spaniel is a superior and very pure breed. The King Charles' dog is a small variety of the spaniel used as a lapdog. The Maltese dog is also a small species of spaniel. The water spaniels, large and small, differ from the common spaniel only in the roughness of their coats, and in uniting the aquatic propensities of the Newfoundland dog with the fine hunting qualities of their own race. Spaniels possess a great share of intelligence, affection, and obedience, which qualities, combined with much beauty, make them highly prized as companions.

Spanish-American War, a war between the United States and Spain that began April 21, 1898, that date

being named in an Act of Congress passed on April 25, declaring that a state of war existed. Spain issued a declaration of war on April 24. Hostilities ended with the signing of a protocol by the Secretary of State for the United States and M. Cambon, the French ambassador, acting for Spain, on Aug. 12, 1898. The final treaty of peace signed by the commissioners in Paris, Dec. 10, 1898, was signed by President McKinley Feb. 10, and by the Queen Regent of Spain March 17, 1899.

From its opening to its close the war lasted 114 days. In that time the United States land and sea forces destroyed two Spanish fleets, received the surrender of more than 35,000 Spanish soldiers, took by conquest the fortified cities of Santiago de Cuba, in Cuba, Ponce, in Porto Rico, and Manila, on the island of Luzon, in the Philippines, and secured control, pending negotiations of peace, of the entire Spanish possessions in the West Indies, the Philippines, and Guam of the Ladrone Islands. The Americans suffered no loss of ships or territory and but 279 killed and 1,465 wounded in battle, while the cost to Spain, aside from prisoners, ships, and lost territory, was 2,199 killed, and 2,948 wounded. The cost to the United States in money was $141,000,000.

The principal events preceding and during the war and the dates on which they occurred are as follows:

Feb. 15 — The United States battleship "Maine" was blown up in the harbor of Havana. According to the report of the Court of Inquiry appointed by the United States the explosion was due to an external mine.

April 20 — President McKinley, authorized by Congress to intervene in Cuba, using the United States military and naval forces, sent an ultimatum to Spain. The Spanish minister at once left Washington, and the next day the United States minister left Madrid.

April 22 — A proclamation was issued by the President blockading the principal ports of Cuba.

April 23 — President McKinley issued a call for 125,000 volunteers to serve for two years.

April 27 — The batteries of Matanzas, Cuba, were shelled by Admiral Sampson's flagship, the "New York," with the monitor "Puritan" and the cruiser "Cincinnati."

April 29 — The Spanish fleet, commanded by Admiral Cervera, consisting of the "Cristobal Colon," the "Almirante Oquendo," the "Maria Teresa," and the "Viscaya," and the torpedo boats "Furor," "Terror," and "Pluton," left the Cape Verde Islands for Cuba.

May 1 — Commodore Dewey, commanding the United States Asiatic squadron, destroyed the entire Spanish fleet in Manila Bay, Philippines, without losing a man.

May 11 — The "Wilmington," "Winslow," and "Hudson" engaged the Spanish batteries at Cardenas. Ensign Bagley and four of the "Winslow's" crew were killed. Maj.-Gen. Wesley Merritt was ordered to the Philippines as military governor.

May 12 — A United States fleet, commanded by Rear-Admiral Sampson, bombarded the fortifications of San Juan, Porto Rico.

May 19 — Admiral Cervera's fleet reached Santiago de Cuba, and a few days later was "bottled up" there by the "flying squadron" of Commodore Schley.

May 25 — President McKinley called for 75,000 more volunteers. Twenty-five hundred United States troops sailed from San Francisco for Manila, several thousand more following at a later date.

May 31 — The "Massachusetts," "Iowa," and "New Orleans" bombarded the fortifications at the mouth of Santiago harbor. They were bombarded again several times after Admiral Sampson took command of the fleet.

June 3 — Assistant Naval Constructor Hobson with seven men ran the collier "Merrimac" to the mouth of Santiago harbor and sank her in the channel under the fire from the Spanish forts. Hobson and his men were taken prisoners.

June 10 — Six hundred marines were landed at Caimanera, Guantanamo Bay, Cuba, where sharp skirmishing continued for several days, several Americans being killed.

June 12 — The 5th Army Corps, commanded by General Shafter, sailed from Tampa on 29 transports for Santiago, arriving off there on June 20.

June 13 — President McKinley signed the War Revenue Bill, providing for the raising of revenues by a stamp tax and providing for a popular bond loan which was immediately subscribed.

June 17 — A Spanish fleet under Admiral Camara left Cadiz for the Philippines, but returned after passing through the Suez Canal.

June 22 — General Shafter's troops began disembarking at Baiquiri and Siboney, near Santiago.

June 24 — Roosevelt's Rough Riders were attacked while advancing toward Santiago; 16 Americans were killed and 40 more wounded before the Spaniards were repulsed.

July 1 — General Lawton took El Caney, near Santiago, and General Kent, commanding the 1st division of the 5th Army Corps, which included the 2d, 6th, 9th, 10th, 13th, 16th, and 24th infantry, and the 71st New York volunteers, took San Juan Hill after heavy fighting. Official reports gave the American losses 231 killed and 1,364 wounded and missing.

July 3 — Admiral Cervera's squadron made a dash out of Santiago harbor, and every vessel was sunk or disabled by the American fleet. General Shafter demanded the surrender of Santiago. The seizure of Guam, in the Ladrone Islands, by the "Charleston" was reported at this time.

July 7 — President McKinley signed resolutions passed by the Senate annexing the Hawaiian Islands to the United States, and the "Philadelphia" was ordered to Honolulu to raise the American flag.

July 17 — General Toral, in command of the Spanish troops at Santiago, General Linares being wounded, surrendered his forces and the E. portion of the province of Santiago de Cuba to General Shafter.

July 20 — Gen. Leonard R. Wood, formerly colonel of the 1st Volunteer cavalry, was appointed military governor of Santiago.

July 25 — United States troops, under Gen. Nelson A. Miles, landed at Guanica, Porto Rico, the town having surrendered to the "Gloucester."

July 26 — Through the French ambassador, the government of Spain asked President McKinley on what terms he would consent to peace.

July 28 — Ponce, the second largest city in Porto Rico, surrendered to General Miles, and he was received by the residents with joyful acclamations. Capture of several other towns, with little or no fighting, followed.

July 30 — President McKinley's statement of the terms on which he would agree to end the war was given to the French ambassador. The President demanded the independence of Cuba, cession of Porto Rico and one of the Ladrones to the United States, and the retention of Manila by the United States pending the final disposition of the Philippines by a joint commission.

July 31 — United States troops engaged the Spaniards at Malate, near Manila, in the Philippines, and repulsed them, with some loss on both sides.

Aug. 9 — The French ambassador presented to President McKinley Spain's reply, accepting his terms of peace.

Aug. 12 — Protocols agreeing as to the preliminaries for a treaty of peace were signed by Secretary Hay and the French ambassador. United States military and naval commanders were ordered to cease hostilities. The blockades of Cuba, Porto Rico and Manila were lifted and hostilities ended.

Aug. 13 — Manila surrendered after a combined assault by the army under General Merritt and Dewey's fleet.

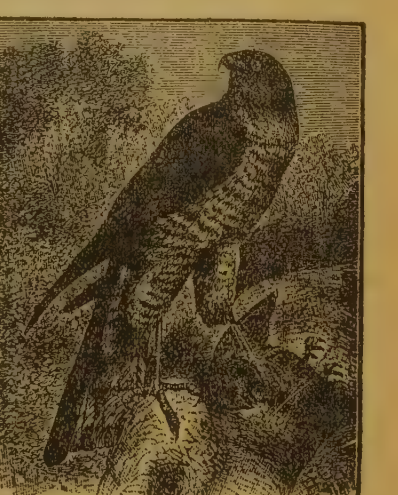
Spanish Fowls, a breed of domestic poultry of Mediterranean origin; tall, with stately carriage; tarsi long; comb single, of great size, deeply serrated; wattles largely developed; earlobes and side of face white; plumage black, glossed with green. They are tender in constitution.

Spanish Main, a name given to the N. coast of South America from the Orinoco to Darien, and to the shores of the former Central American provinces of Spain contiguous to the Caribbean Sea. The name, however, is often popularly applied to the Caribbean Sea itself, and in this sense occurs frequently in connection with the buccaneers.

Sparidæ, a family of fishes. They somewhat resemble the perches in form, the body being generally of an ovate form and covered with large scales. The Sparidæ are mostly inhabitants of warm climates. They are edible, and some of them much esteemed. The sheep's head of the Atlantic coast of the United States is very highly prized.

Sparks, Jared, an American historian; born in Willington, Conn., May 10, 1789; was graduated at Harvard College in 1815; studied theology; and was ordained in the Unitarian Church in Baltimore in 1819. He took part in the doctrinal controversy with orthodox theologians; was chosen chaplain of the National House of Representatives in 1821; edited the "Unitarian Miscellany and Christian Monitor" in 1821–1823; conducted the "North American Review" in 1824–1831; and was the originator and first editor of the "American Almanac and Repository of Useful Knowledge." He was Professor of Ancient and Modern History at Harvard in 1839–1849; president of the college in 1849–1863; and the author of a large number of sermons, biographical and historical works, theological papers, etc., most notably "The Library of American Biography" and "Correspondence of the American Revolution." He died in Cambridge, Mass., March 14, 1866.

Sparrow, in ornithology, the house sparrow, a well known bird, the constant follower of civilized man. It ranges over Europe, into the N. of Africa and Asia, and has been introduced into America and Australia. Sparrows are found even in crowded cities and in manufacturing towns, these differing only from country birds in being dirtier, and, if possible, more daring. Mantle of male brown, striped with black; head bluish-gray; two narrow bands, one white and the other rusty-yellow, on wings; cheeks grayish-white, front of neck black, under-parts light-gray.



COMMON SPARROW HAWK.

Sparrow Hawk, in ornithology, extending across Europe, through Asia to Japan. The adult male is about 12 inches long, dark-brown on the upper surface, softening into gray as the bird grows old; the entire under surface is rusty-brown, with bands of a darker shade. The sparrow hawk is very destructive to small quadrupeds and young birds. The name is also applied to the American falcon, the Australian collared sparrow hawk, the European kestrel, and the New Zealand quail hawk.

Sparta, or **Lacedæmon,** a celebrated city of ancient Greece; capital of Laconia and of the Spartan State, and the chief city in the Peloponnesus; on the W. bank of the Eurotas river, and embraced a circuit of 6 miles. Sparta was a scattered city consisting of five separate quarters. Unlike Athens it was plainly built, and had few notable public buildings; consequently there are no imposing ruins to be seen here as in Athens, and the modern Sparta is only a village of some 4,000 inhabitants.

The Spartan State was founded, according to tradition, by Lacedæmon, son of Zeus. The most celebrated of its legendary kings was Menelaus. Shortly after their settlement in the Peloponnesus it is probable that the Spartans extended their sway over all the territory of Laconia, a portion of the inhabitants of which they reduced to the condition of slaves. They also waged war with the Messenians, the Arcadians, and the Argives, against whom they were so successful that before the close of the 6th century B. C. they were recognized as the leading people in all Greece.

Early in the following century began the Persian wars, in which a rivalry grew up between Athens and Sparta. This rivalry led to the Peloponnesian war, in which Athens was humiliated and the old ascendency of Sparta regained. Soon after this the Spartans became involved in a war with Persia, and Athens, Thebes, Corinth, and some of the Peloponnesian States took this opportunity to declare war against them. This war, known as the Bœotian or Corinthian war, lasted eight years and increased the reputation and power of Athens. To break the alliance of Athens with Persia, Sparta, in 387 B. C., concluded with the latter power the peace known by the name of Antalcidas; and the designs of Sparta became apparent when she occupied, without provocation, the city of Thebes, and introduced an aristocratical constitution there. Pelopidas delivered Thebes, and the celebrated Theoan war (378–363) followed, in which Sparta was much enfeebled. During the following century Sparta steadily declined, though one or two isolated attempts were made to restore its former greatness. The principal of these was made by Cleomenes (236–222), but his endeavors failed, because there were then scarcely 700 of Spartan descent, and the majority of these were in a state of beggary. With the rest of Greece Sparta latterly passed under the dominion of the Romans in 146 B. C.

Spartacus, the leader of the Roman slaves in the great revolt which broke out about 73 B. C.; a Thracian by birth, who from a shepherd became a leader of a band of robbers when he was captured and sold to a trainer of gladiators at Capua. On the murder of his father by the Romans he had made an oath to wage war against Rome; and he formed a conspiracy to escape, and, when it was discovered, broke out with some 70 followers, with whom he made for the crater of Vesuvius, where hordes of runaway slaves soon joined him. He first overpowered and seized the arms of a force sent against him from Capua, next routed an army of 3,000 men under C. Clodius, and so passed from victory to victory, overrunning Southern Italy and sacking many of the cities of Campania, his numbers growing to 100,000 men. Spartacus, who failed to get support from the Italian communities, and from the first knew the real weakness of his position, strove to persuade his victorious bands to march N. to the Alps and disperse to their native regions; but they were intoxicated with victory, and saw glittering before their eyes all the plunder of Italy. Against his better judgment he continued the war, showing himself a consummate captain in the strategy and valor with which he routed one Roman consular army after another, and the policy by which for long he assuaged the jealousies and dissensions among his followers. At length in 71 M. Licinius Crassus received the command, and after some time of cautious delay forced Spartacus into the narrow peninsula of Rhegium, from which, however, he burst out through the Roman lines with a portion of his force. Crassus urged the Senate to recall Lucullus from Asia and Pompey from Spain, but meantime he himself pursued active hostilities against the dreaded enemy. Spartacus finding all hope at an end made a dash on Brun-

dusium, hoping to seize the shipping and get across the Adriatic, but was foiled by the presence of Lucullus, whereupon he fell back on the river Silarus, and there made a heroic stand against Crassus till he was cut down.

Spasms, irregular and violent contractions of the muscular structures, but less violent than convulsions. Spasms are always involuntary, even when the voluntary muscles are concerned. There are two varieties of spasms, called tonic and clonic. Tonic spasms, or spastic contractions, consist in contractions attended with rigidity or hardness of the muscles, as in common cramps and tetanus. Clonic spasms consist in rapidly alternating contraction and relaxation, as in chorea, epilepsy, and convulsive hysteria. Spasms constitute the more important symptoms in several diseases.

Spathe, or **Spatha,** in botany, a large bract or floral leaf enveloping the immature inflorescence of some monocotyledons, and so guarding it from injury. The enclosed inflorescence often consists of an axis bearing numerous closely-packed sessile flowers, arranged in a spike-like manner — this is termed a spadix. The genus Arum offers a good example of spathe and spadix. In palms the spadix is frequently branched, the branches being subtended by secondary spathes.

Spatula, a knife, with a broad, thin, flexible blade, used by druggists, color compounders, painters, etc., for spreading plasters and working pigments. In surgery, a flat instrument, angular or straight, for depressing the tongue.

Spatularia, or **Polyodon,** a genus of fishes belonging to the sturgeon tribe. They are remarkable for the form of their snouts, which are enormously long and leaf-like in form. The type of the genus is the paddle fish of the Mississippi.

Spaulding, Solomon, an American clergyman and writer; born in Ashford, Conn., in 1761. He was a Revolutionary soldier, a Congregational minister, and afterward a manufacturer of iron. While living at Conneaut, Pa. (1811–1812), he wrote a romance, "The Manuscript Found," published in 1812, purporting to have been discovered in an ancient mound. This work was said to have furnished the basis for the "Book of Mormon"; in denial of which the original manuscript of Spaulding's romance was republished by the Mormons in 1885. He died in Amity, Pa., Oct. 20, 1816.

Spavin, a disease of horses which occurs under two different forms, both interfering with soundness. In young, weakly, or over-worked subjects the hock-joint is sometimes distended with dark-colored thickened synovia or joint oil. This is bog spavin. The second variety of spavin is the more common. Toward the inside of the hock, at the head of the shank bones, or between some of the small bones of the hock, a bony enlargement may be seen and felt. This is bone spavin. At first there is tenderness, heat, swelling, and considerable lameness; but as the inflammation in the bone and its investing membrane abates the lameness may entirely disappear, or a slight stiffness may remain.

Spawn, the eggs or ova of fishes, frogs, etc., from which, when fertilized by the males, a new progeny arises that continues the species. In the oviparous fishes with distinct sexes the eggs are impregnated externally, and arrive at maturity without the aid of the mother. The spawn being deposited by the female, the male then pours on it the impregnating fluid. In the ovoviviparous fishes sexual intercourse takes place, and the eggs are hatched in the uterus. Fishes exhibit a great variety in regard to the number of their eggs. In the spawn of a cod-fish, for example, no fewer than 3,500,000 eggs have been found. In general, before spawning, fish forsake the deep water and approach the shore, and some fish leave the salt water and ascend the rivers before spawning, and then return again.

Speaker, in politics, one who presides over a deliberative assembly, preserving order and regulating the debates; as, the Speaker of the House of Representatives; the Speaker of the House of Lords or Commons, etc. The Speaker of the House of Representatives is chosen by ballot from among the members upon the assembling of Congress, and occupies that office till

the expiration of the body by adjournment sine die. If an extra session be called there is no new election of speaker, the same officer presiding over the deliberations. The presiding officer in the Senate is styled the President of the Senate, and he is not elected by that body, the office being held ex-officio by the Vice-President of the United States.

Speaking Trumpet, an instrument for enabling the sound of the human voice to be conveyed to a greater distance. It is of the utmost use on shipboard in enabling the officers to convey orders during windy weather from one part of the deck to another, or to the rigging. The invention is ascribed to Sir Samuel Morland in 1670.

Spear, a weapon of offense, consisting of a wooden shaft or pole varying in length up to eight or nine feet, and provided with a sharp piercing point. The spear may be regarded as the prototype of the various forms of piercing weapons, such as the arrow, bolt, and dart, which are projected from bows, catapults, or other engines, and the javelin, assegai, and lance, held in or thrown by the hand. The longer and heavier spears and lances are mainly retained in the hand while in use, but there is no absolute distinction, and the throwing of a spear has in all ages been a form of offensive warfare. There can be no doubt that a weapon such as the spear is the most ancient as well as the most universal of warlike and hunting weapons.

Spear, James, an American manufacturer; born in Mauch Chunk, Pa., Feb. 17, 1827; removed to Philadelphia in 1848, and engaged in the manufacture of stoves. He made the first successful car heater, and invented a number of familiar devices, the principal one being the anti-clinker grate, which is now in general use. He took an active interest in the Blind Men's Home, was one of the incorporators of the Hayes Mechanics' Home, and aided many institutions, especially the University of Pennsylvania. He died in Wallingford, Pa., Jan. 30, 1902.

Spearmint, or **Spiremint,** in botany, a mint, with oblong, lanceolate, sub-acute, serrate leaves, and slender spikes of flowers. Found in watery places. It is used in cookery as a sauce, and yields an aromatic and carminative oil, oil of spearmint.

Spear Thistle, a common thistle It grows on waysides and in pastures The leaves are downy beneath, and their points long and very sharp, and it has handsome heads of purpl flowers.

Spearwort, a plant including th great spearwort and the lesser spear wort. The latter is an American plant, with lanceolate undivided leave and yellow flowers, growing in we localities.

Species, in biology, a somewhat am biguous term used to denote a limite group of organisms, resembling eac other, and capable of reproducing sim ilar organisms, animal or vegetable, a the case may be. A species is de fined by Haeckel as "the sum of al cycles of reproduction which, unde similar conditions of existence, ex hibit similar forms." Linnæus hel that all species were the direct de scendants from and had the charac ters of primevally created forms, an in this he was followed by those wh accepted the first chapter of Genesi in a strictly literal sense. Buffo and Cuvier, leaving the question o origin on one side, held the distin guishing marks of a species to b similarity and capability of reproduc tion.

Darwin in his "Origin of Species" says: "I look at the term species a one arbitrarily given for the sake o convenience to a set of individual closely resembling each other, an that it does not essentially differ fro the term variety, which is given t less distinct and more fluctuatin forms."

Spectacle, in the plural, a familia and invaluable optical instrumen used to assist or correct defects o vision.

Spectacled Bear, the sole repre sentative of the bears in Sout America, inhabiting the high moun tain forests of Chile and Peru. S called from the light colored ring round the eyes having exactly the ap pearance of a pair of spectacles; th rest of the face and body being black

Spectroscope, an instrument fo observing spectra, or for spectrum analysis. With a single glass prism

the few most prominent lines in a solar spectrum may be seen by using a narrow slit to admit the light, which was the first great improvement made upon Newton's experiment, since a hole or wide slit gives confusion of effect. The second great improvement was to place a collimating lens behind the slit at its focal distance, whereby all the rays from the slit became a parallel bundle before passing through the prism. Finally a small telescope was mounted behind the prism to magnify and define the image thus obtained. The whole arranged on a table, with means of adjusting the collimating and eye tubes at the proper angles with the prism, forms the ordinary single-prism spectroscope. Further prisms may be added to increase the dispersion, and as many as 11 have been used, but it is more usual to employ half the total number, and having sent the rays once through their lower portion, to reflect them back again through the upper ends, thus using each prism twice.

One of the largest spectroscopes in the world was completed in 1899 by Prof. John A. Brashear, an astronomer of Allegheny, Pa., for Dr. Hans Hauswaldt, a scientist of Magdeburg, Germany. This powerful concave grating instrument is 21 feet long and requires a room about 25 feet square in which to operate it. The grating used on the spectroscope has a six-inch aperture and is ruled with 110,000 lines. So accurately are these lines ruled that none of them varies more than 3–1,000,000 of an inch from the correct position; and so powerful is the instrument that whereas an ordinary spectroscope would show from 100 to 200 lines belonging to the spectrum of iron, this apparatus will reveal more than 2,000.

Spectrum, in optics, the colored image or images produced when the rays from any source of light are decomposed or dispersed by refraction through a prism.

Spectrum Analysis, in physics and chemistry, the determination of the chemical composition, the physical condition, or both, of any body of the spectrum of the light which it emits or suffers to pass through it, under certain conditions. For such determinations an instrument is used called the spectroscope, which employs the light passing through a very narrow slit, and, by using more prisms than one, disperses or separates the colors a great deal more than one prism alone can do.

Speech, spoken language; uttered sounds intended to convey meaning, and produced by the organs of voice, namely, the larynx, and the mouth and its parts, including the tongue and teeth. In speech two great classes of sounds are produced, these being usually known as vowels and consonants. Vowels are pronounced by sounds coming primarily from the larynx and passing with comparative freedom through the mouth cavity, though modified in certain ways; while consonants are formed by sounds caused by the greater or less interruption of the current of air from the larynx in the mouth. A single sound may convey an idea of itself and thus form a word, or several may be combined to form a word, and if the word is uttered by several distinct successive changes in position of the vocal organs it is a word of so many syllables. Words, again, are combined to form sentences or complete statements, and the aggregate of words used by any people or community in mutual intercourse forms its language.

Speed, James, an American lawyer; born in Jefferson co., Ky., March 11, 1812. The outbreak of the Civil War found Judge Speed an uncompromising Union man, and he took charge of the recruiting stations in Kentucky. He was a brother of Joshua F. Speed, the friend of Abraham Lincoln, and it was probably through this acquaintance with his brother that Lincoln came to select Speed for a place in his cabinet, though he had previously gained distinction as a lawyer and professor in the Law School of Transylvania University at Lexington. Speed was appointed Attorney-General in November, 1864, and was retained in the office by President Johnson after the assassination of Mr. Lincoln till July, 1866, when he resigned. He died June 25, 1887.

Speed, John Gilmer, an American journalist; born in Kentucky,

Sept. 21, 1853; was graduated at the University of Louisville in 1869; practised as an engineer; became associated with several railroad companies; was city engineer of Louisville; and served also on the United States Board of Transportation at the Centennial Exposition in Philadelphia in 1876. In 1877 he gave up engineering and turned his attention to journalism. He joined the staff of the New York "World" in 1877; was its managing editor in 1879–1883; traveled abroad in 1883–1888; and was the editor of the "American Magazine" in 1889, and of "Leslie's Weekly" in 1896–1898.

Spelt, in botany, an inferior kind of wheat, called also German wheat. It has a stout, almost solid straw, with strong spikes of grain. It is more hardy than common wheat, and grows in Bavaria and other parts of Germany, in the S. of France, and in elevated situations in Switzerland where common wheat would not ripen.

Spencer, Herbert, an English philosopher; born at Derby, 1820; educated by his father, a teacher of mathematics, and his uncle, a clergyman; was apprenticed as a civil engineer, and worked several years on railways; contributed several professional papers to the Civil Engineers' and Architects' Journal, besides a series of letters in 1842, on the Proper Sphere of Government, to the Nonconformist; became in 1848 sub-editor to the Economist; published Social Statics, and Principles of Psychology. About the year 1859 he projected his scheme of philosophy, based on the principle of evolution in its relation to life, mind, society, and morals. This large scheme has been only partially fulfilled as follows: "First Principles," one vol.; "Principles of Biology," two vols.; "Principles of Psychology," two vols.; "Ceremonial Institutions," "Political Institutions," "Ecclesiastical Institutions," these latter being parts of his "Principles of Sociology." His other works include "Education"; "Essays: Scientific, Political, and Speculative"; "Classification of the Sciences"; "The Study of Sociology"; "Data of Ethics"; and "Man versus the State." Besides his own work he has published eight parts of an elaborate "Descriptive Sociology," compiled by other writers, but classified and arranged by himself. He is at present engaged on "Principles of Morality," a part of his great scheme.

Spencer, Jesse Ames, an American educator; born in Hyde Park, N. Y., June 17, 1816; was appointed Professor of Greek in the College of the City of New York in 1869, and was the author of "History of the United States," etc. Died in 1898.

Spencer, Platt Rogers, an American penman; born in East Fishkill, N. Y., Nov. 7, 1800; taught his first writing class in 1815; was employed as a clerk and bookkeeper in 1816–1821; studied law in 1821–1824; and subsequently taught in the common schools. Later he was county treasurer for 12 years, and in 1848 published a system of penmanship under the title "Spencer and Rice's System of Business and Ladies' Penmanship," which was followed by his "Spencerian, or Semi-Angular Penmanship." Through his work and influence as a teacher he was instrumental in founding "business colleges" in the United States, and in promoting their growth and development. He died in Geneva, O., May 16, 1864.

Spencer, William Loring (because of her masculine name called "The Major"), an American author, second wife of Gen. George E. Spencer; born in St. Augustine, Fla. She wrote: "Salt Lake Fruit," "Story of Mary," etc.

Spenser, Edmund, an English poet; born in London, England, probably in the year 1552. He entered as a sizar at Pembroke Hall, Cambridge, in 1569, became B. A. in 1573, and M. A. in 1576. In 1569 appeared a book "devised" by S. John Vander Noodt, the title of which begins, "A Theater wherein he represented as well the Miseries and Calamities that follow the Voluptuous Worldlings, as also the greate joyes and Pleasures which the Faithfull do enjoy." This volume was prefaced by the first six of "Petrarch's Visions" done into verse styled "Epigrams," and 15 "Sonnets," which were published subsequently among Spenser's works, in which publications they are said to have been "formerly translated."

In 1589 he was visited by Raleigh at Kilcolman Castle, Cork county, where his friends obtained for him from Queen Elizabeth 3,028 acres of land, the grant, which is extant, being dated Oct. 26, 1591. The "Faerie Queene" was already begun in 1580, and three books were finished by the close of the year 1589. Raleigh was so much delighted with what Spenser showed him of his poem, that he carried him over to England, where it was printed. Spenser was also introduced to Elizabeth, who, a year after the publication of the "Faerie Queene" (1590), made him virtually her leaureate with a pension of $250 a year. In the same year he returned to Ireland, and no sooner was his back turned on London than the publisher of the "Faerie Queene" gathered all scraps of his minor poems together and published them in a volume entitled "Complaints," which include "The Ruines of Time," "The Teares of the Muses," "Vergil's Gnat," "Mother Hubbard's Tale," "The Ruines of Rome by Bellay," "Muiopotomos, or the Tale of the Butterflie," "Visions of the World's Vanitie," "Bellayes," and "Petrarches Visions."

In 1592 he married a lady named Elizabeth, to whom his "Amoretti," or "Sonnets" (1595), are addressed, and who is celebrated in his "Epithalamium," "the most perfect of all his poems, the most beautiful of all bridal songs." At the same time as the "Amoretti" appeared "Colin Clout comes Home Againe"; and probably at the close of the same year Spenser returned to England to superintend the publication of books IV.–VI. of the "Faerie Queene." During his stay in England he wrote the "Hymns to Heavenly Love and Heavenly Beauty" and the "Prothalamium," his last works. In 1597 he returned to his quiet life at Kilcolman, but in the next year Tyrone's rebellion forced him to flee, for he represented the government as clerk of the council of Munster, and was sheriff-designate of Cork. His house was burnt, and a child perished in the flames, according to a statement made by Ben Jonson to Drummond of Hawthornden. Spenser reached England brokenhearted, and died, Jan. 16, 1599, in a tavern in King street, Westminster, "for lack of bread," as Jonson told Drummond. This, however, must have been an exaggeration, for though Spenser returned "inops," according to Camden, he was still in receipt of a pension, and must still have had influential friends. He was buried near Chaucer in Westminster Abbey.

Spermaceti, a neutral, inodorous, and nearly tasteless, fatty substance, extracted from the oily matter of the head of the sperm whale by filtration and treatment with potash-lye. Spermaceti was formerly given as a medicine; now it is chiefly employed externally as an emollient and in the preparation of a blistering paper.

Spermatozoa, the microscopic animalcule-like bodies developed in the semen of animals, each consisting of a body and a vibratile filamentary tail, exhibiting active movements comparable to those of the ciliated zoöspores of the algæ, or the ciliated epithelial cells of animals. Spermatozoa are essential to impregnation.

Sperm Oil, the oil of the spermaceti whale, which is separated from the spermaceti and the blubber. This kind of oil is much purer than train oil, and burns away without leaving any charcoal on the wicks of lamps. In composition it differs but slightly from common whale oil.

Sperm Whale, or **Cachalot,** the species of cetacea belonging to the section of the whale order denominated "toothed" whales, generally met with in the Pacific, but occasionally also on the coast of Greenland. The large blunt head in an old male is sometimes 30 feet long, and forms about a third of the total length of the body; while the "blow holes" or S-shaped nostrils are situated in the front part of the head. The weight of an adult animal is estimated at about 200 tons, and in a male 66 feet long the flipper measured 5 feet 3 inches, and the two-lobed tail fin has a breadth of nearly 20 feet. The top of the back is continued almost in a straight line from the upper part of the head; the belly is enormous, but the body thins off toward the wide tail. The color is a blackish-gray, which may exhibit greenish or bluish hues on the upper parts. The teeth of the lower jaw average each about three inches in length.

Sphegidæ, or **Sphecidæ,** a family of hymenopterous insects, winged in both sexes, and much resembling bees or wasps in general appearance. They are solitary in their habits. Many of them burrow in sand and are known as sand wasps.

SAND WASP.

Sphenodon, a peculiar genus of lizards, regarded as forming a family by itself. The only known species is a native of New Zealand, and though once abundant is now being rapidly thinned. Of late it has become the favorite food of the pig and is eaten by man. It frequents rocky islets, living in holes in the sand or among stones.

Sphenopteris, a genus of ferns, having the leaves twice or thrice-pinnate; the leaflets not adhering to the rachis by their whole base, but resembling small wedges reversed, the nervures dividing pinnately from the base. From the Devonian to the Wealden. In the Carboniferous rocks there are 34 species, and in the Jurassic 17.

Sphere, in astronomy, a term formerly applied to any one of the concentric and eccentric revolving transparent shells in which the heavenly bodies were supposed to be fixed, and by which they were carried so as to produce their apparent motions. The word now signifies the vault of heaven, which to the eye seems the concave side of a hollow sphere, and on which the imaginary circles marking the positions of the equator, the ecliptic, etc., are supposed to be drawn. It is that portion of limitless space which the eye is powerful enough to penetrate, and appears a hollow sphere because the capacity of the eye for distant vision is equal in every direction.

In geometry, a solid or volume bounded by a surface, every point of which is equally distant from a point within, called the center. Or it is a volume that may be generated by revolving a semicircle about its diameter as an axis.

In logic, the extension of a general conception; the individuals and species comprised in any general conception. The doctrine of the sphere is the application of geometrical principles to geography and astronomy. An oblique sphere, or spherical projection, is the projection made on the plane of the horizon of any place not on the equator or at the poles.

Sphex, a genus of hymenopterous insects, closely allied to the true wasps. The sphex wasps are solitary in habit, and there are no workers as in the social forms. The female hollows out, at the end of a long passage, three or four chambers, in each of which she deposits an egg and a store of food for the larva she will never see. The food consists of grasshoppers or other insects. Four paralyzed insects are placed in each chamber, which is sealed up as it is finished. When all are full the mouth of the passage is also closed, and the nest is abandoned.

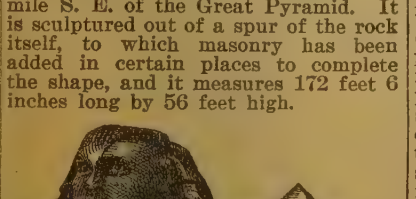
Sphincter, in anatomy, a name applied generally to a kind of circular muscles, or muscles in rings, which serve to close the external orifices of organs, as the sphincter of the mouth, of the eyes, etc., and more particularly to those among them which, like the sphincter of the anus, have the peculiarity of being in a state of permanent contraction, independently of the will, and of relaxing only when it is required that the contents of the organs which they close should be evacuated.

Sphingidæ, the hawk moth family comprising the most robust and powerful insects in the order, and generally distinguished by their strength of flight and large size.

Sphinx, a Greek word signifying "strangler," applied to certain symbolical forms of Egyptian origin, having the body of a lion, a human or an animal head, and two wings. Various other combinations of animal forms

have been called by this name, though they are rather griffins or chimæras. Human-headed sphinxes have been called andro-sphinxes; that with the head of a ram, a criosphinx; and that with a hawk's head, a hieracosphinx. The form when complete had the wings added at the sides; but these are of a later period and seem to have originated with the Babylonians or Assyrians. In Egypt the sphinx also occurs as the symbolical form of the monarch considered as a conqueror, the head of the reigning king being placed on a lion's body, the face bearded, and the usual head dress. Thus used, the sphinx was generally male; but in the case of female rulers that figure has a female head and the body of a lioness.

The most remarkable sphinx is the Great Sphinx at Gizeh (Giza), a colossal form hewn out of the natural rock, and lying about a quarter of a mile S. E. of the Great Pyramid. It is sculptured out of a spur of the rock itself, to which masonry has been added in certain places to complete the shape, and it measures 172 feet 6 inches long by 56 feet high.



THE SPHINX NEAR GIZEH.

Sphinx Baboon, a large species from the West of Africa. They are good-tempered and playful when young, but become morose and fierce as they grow older. They bear confinement well, and are common in menageries.

Sphinx Moth, a species of moth deriving its popular name from a supposed resemblance which its caterpillars present when they raise the fore part of their bodies to the "sphinx" of Egyptian celebrity. The sphinx moth is common in some parts of the United States.

Spica Virginis, or **Spica Azimeth,** in astronomy, a star of the first magnitude, Alpha Virginis, in the constellation Virgo. If a line be drawn through two opposite angles of the rectangular figure in the Great Bear, and prolonged with a slight curve, it will pass through Spica Virginis.

Spices, aromatic and pungent vegetable substances used as condiments and for flavoring food. They are almost exclusively the productions of tropical countries. In ancient times and throughout the Middle Ages all the spices known in Europe were brought from the East; and Arabia was regarded as the land of spices, but rather because they came through it or were brought by its merchants than because they were produced in it, for they were really derived from farther E. They owe their aroma and pungency chiefly to essential oils which they contain. They are yielded by different parts of plants; some, as pepper, cayenne pepper, pimento, nutmeg, mace, and vanilla, being the fruit or particular parts of the fruit; while some as ginger, are the root stock; and others, as cinnamon and cassia, are the bark. Tropical America produces some of the spices, being the native region of cayenne pepper, pimento, and vanilla; but the greater number are from the East.

Spider, in zoölogy, the popular name of any individual of Huxley's Araneina. The species are very numerous and universally distributed, the largest being found in the tropics. The abdomen is without distinct divisions, and is generally soft and tumid; the legs are eight in number, seven-jointed, the last joint armed with two hooks usually toothed like a comb. There are two or four pulmonary sacs and a tracheal system; eyes generally eight in number; no auditory organs have been discovered. Their most characteristic organ is the arachnidium, the apparatus by which fine silky threads — in the majority of the species utilized for spinning a web — are produced. In the common garden spider, more than 1,000 glands, with separate excretory ducts, secrete the viscid material of the web. These ducts ulitmately enter the six prominent arachnidial mammillæ, projecting

from the hinder end of the abdomen, and having their terminal faces beset with minute arachnidial papillæ, by which the secretion of the gland is poured out.

By means of these silky threads, spiders form their dwellings and construct ingenious nets for the capture of their prey; these threads serve also as a safeguard against falling, and as a means of support from one elevated object to another, being thrown out as a sort of flying bridge. The webs are in high repute for stanching blood; the threads are employed for the cross lines in astronomical telescopes, and have been made into textile fabrics as articles of curiosity. Spiders are extremely pugnacious, and in their combats often sustain the loss of a limb, which, like the Crustaceans, they have the power of reproducing. The males are smaller than the females, which they approach with great caution, as they run great risk of being devoured, even at the time of impregnation. The eggs are numerous, and usually enveloped in a cocoon or egg case; the young undergo no metamorphosis.

SPIDER FLY.

Spider Fly, a genus of dipterous insects, chiefly allied to the forest fly. The genus are parasitical on birds, never on quadrupeds. One species frequently infests the common fowl, the black-cock, and other birds. It is greenish-yellow, with smoke-colored wings.

Spider Monkey, a general name applied to many species of platyrhine or New World monkeys, distinguished by the great relative length, slenderness, and flexibility of their limbs, and by the prehensile power of their tails. A familiar species is the chameck, which occurs abundantly in Brazil. The body is about 20 inches, the tail 2 feet long, and the color is a general black. The coaita, another typical species, has an average length of 12 inches; the tail measures over 2 feet long, and the fur is of a glossy black hue.

SPIDER MONKEY.

Spike, in botany, that kind of inflorescence in which sessile flowers, or flowers having very short stocks, are arranged around an axis, as in the greater plantain, common vervain, common lavender, and some species of sedge. In rye, wheat, barley, darnel, and many other grasses there is a sort of compound spike — i. e., the flowers or fruits are arranged together in spikelets on short stalks, which again surround the top of the culm in the form of a spike. The catkin, the spadix, and the cone may be regarded as varieties of the spike.

Spiking, the operation of quickly rendering a muzzle-loading gun useless, resorted to by troops compelled to abandon their own pieces or unable to remove those of the enemy which they have captured. The process consists in driving a cast iron spike into the vent or touch hole and then breaking it off short with a hammer. A spiking party of artillerymen always accompanied a storming party. To render a spiked gun again serviceable it was generally necessary to drill a fresh vent. Breech loading guns are best rendered temporarily unservice-

able by removing part of the breech mechanism.

Spinach, or **Spinage,** a wholesome though somewhat insipid vegetable. It is a native of Siberia. The fleshy leaves are somewhat triangular in outline, deep green in color, and for table are generally served boiled and chopped, or as an ingredient in soups and stews.

Spinal Cord, the name given in anatomy to the great cord or rod of nervous matter which is inclosed within the backbone or spine of vertebrates. The spinal cord in man, which is from 15 to 18 inches long, has direct connection with the brain by means of the medulla oblongata, and passes down the back till it terminates in a fine thread at the level of the first lumbar vertebra. Lodged in the bony vertebræ it varies in thickness throughout, and like the brain is invested by membranes called respectively pia mater and dura mater. Situated between these two are the delicate layers of the arachnoid membrane, inclosing a space which contains the cerebro-spinal fluid. Besides these protective coverings there is also a packing of fatty tissue which further tends to diminish all shocks and jars. The spinal nerves, to the number of 31 on each side, pass out from the cord at regular intervals, pierce the dura mater, escape from the backbone, and ramify thence through the soft parts of the body. In its functions the spinal cord forms a tract along which sensory impressions may pass to the brain, and along which motor impulses may travel to the muscles. It is besides a great reflex center.

Spinal Nerves, the name applied to the paired nerves which arise from the spinal cord, and which are distributed to the various parts of the body. The spinal nerves are so named in contradistinction to the cranial nerves, or those which originate from the brain itself. Thirty-one pairs of spinal nerves arise from the spinal cord of man. They pass from the spinal cord and spine through the intervertebral foramina; or openings between the bodies of the vertebræ.

Spine, the term applied to the backbone of a vertebrated animal, and so called from the thorn-like processes of the vertebræ. The human vertebral column is composed, in the child, of 33 separate pieces, but in the adult the number is only 26, several pieces having become blended together. These separate bones are arranged one on the top of the other, with a layer of gristle between each which helps to unite them, while this union is completed by partially movable joints and strong fibrous ligaments.

Spine, in botany, a sharp process from the woody part of a plant. It differs from a prickle, which proceds from the bark. A spine sometimes terminates a branch, and sometimes is axillary, growing at an angle formed by the branch or leaf with the stem. The wild apple and pear are armed with spines; the rose, bramble, gooseberry, etc., are armed with prickles. The term is applied in zoölogy to a stout, rigid, and pointed process of the integument of an animal, formed externally by the epidermis and internally of a portion of the cutis or corresponding structure.

Spinet, in music, a musical stringed instrument resembling the harpsichord, and, like that instrument, now superseded by the pianoforte. Each note had but one string, which was struck by a quilled jack acted on by one of the finger keys. The strings were placed horizontally, and nearly at right angles to the keys; and the general outline of the instrument resembled that of a harp laid in a horizontal position, on which account the spinet, when first introduced, was called the couched harp.

Spinner, Francis Elias, an American financier; born in Mohawk, N. Y., Jan. 21, 1802; was elected to Congress in 1854 as an Anti-slavery Democrat, being twice reëlected, serving till 1861; from 1861–1875 he was United States Treasurer, and handled the immense receipts and disbursements of the Civil War without the loss of a cent of the nation's money. Died, Jacksonville, Fla., Dec. 31, 1896.

Spinning, the art of combining animal and vegetable fibers into continuous threads fit for the process of weaving, sewing, or ropemaking.

Spinning Jenny, the name given by James Hargreaves to the spinning machine invented by him in 1767.

The name jenny is a corruption of engine, the term gin being a common local expression for a machine. It consisted of a number of spindles turned by a common wheel or cylinder worked by hand.

Spinning Wheel, a machine for spinning wool, cotton, or flax into threads by the hand. It consists of a wheel, band, and spindle, has a distaff attached, and is driven by foot or by hand, usually the former, a treadle being employed. Before the introduction of machinery for spinning there were two kinds of spinning wheels in common use, the large wheel for spinning wool and cotton, and the small or Saxon wheel for spinning flax.

Spire, a very acute pyramid roof in common use over the towers of churches. Among famous spires may be mentioned those of Ulm (530 feet), Cologne (515), Rouen of cast iron, (487½). St. Patrick's Cathedral, New York (328) is the highest in the United States.

Spirit, an immaterial intelligent substance or being; vital or active principle, essence, force, or energy, as distinct from matter; life or living substance considered apart from material or corporeal existence; as, the soul of man, as distinguished from the body wherein it dwells. Hence, a ghost; a specter; a supernatural apparition or manifestation; also, sometimes, an elf; a fay; a sprite. Also, real meaning; intent; in contradistinction to the letter or to formal statement; and characteristic quality, particularly such as is derived from the individual genius or the personal character; as, the spirit of the law.

In chemistry, a name generally applied to fluids, mostly of a lighter specific character than water, and obtained by distillation. But in a stricter sense the term spirit is understood to mean alcohol in its potable condition, of which there are very numerous varieties deriving their special characters from the substances used in their production, as brandy, rum, whisky, gin, arrack, etc.

In theology, the Spirit, or Holy Spirit, the Holy Ghost; the Spirit of God, or the third person of the Trinity. The spirit also denotes the human spirit as animated by the Divine Spirit.

Spirit Level, an instrument used for determining a line or plane parallel to the horizon, and also the relative heights of two or more stations. It consists of a glass tube nearly filled with alcohol, preferably colored. The remaining space in the tube is a bubble of air, and this occupies a position exactly in the middle of the tube when the latter is perfectly horizontal. The tube is mounted on a wooden bar, which is laid on a beam or other object to be tested; or it is mounted on a telescope or theodolite, and forms the means of bringing these instruments to a level, the slightest deviation from the horizontal position being indicated by the bubble rising toward the higher end of the tube. Spirit level quadrant, an instrument furnished with a spirit level and used for taking altitudes.

Spiritualism, the term used in philosophy to indicate the opposite of materialism, and the belief in the existence and life of the spirit apart from, and independent of, the material organism, and in the reality and value of intelligent intercourse between spirits embodied and spirits disembodied. The belief in spirit manifestations has long obtained, but in its limited and modern form spiritualism dates from the Fox sisters in 1848. In this year a Mr. and Mrs. Fox, who lived with their two daughters at Hydeville, N. Y., were disturbed by repeated and inexplicable rappings throughout the house. At length it was accidentally discovered by one of the daughters that the unseen "rapper" was so intelligent as to be able to reply to various pertinent questions, and so communicative as to declare that he was the spirit of a murdered peddler. When this discovery was noised abroad a belief that intercourse could be obtained with the spirit world became epidemic, and numerous "spirit circles" were formed in various parts of America. The manifestations thus said to be received from the spirit were rappings, table turnings, musical sounds, writings, the unseen raising of heavy bodies, and the like. These lower manifestations of spiritualism are said to be given to the nonbeliever as evidence that the facts on which the spiritualistic beliefs are based are

realistic. Part of the peculiarity of these phenomena was that they were always more or less associated with a medium, who was supposed to have an organization, sensitively fitted to communicate with the spirit world. Mediums are usually persons who see visions and hear voices, and show evidence of their power even in childhood. In the United States, the believers in spiritualism are very numerous, and have many newspapers, magazines, and books to explain and enforce their belief. In 1884 the London Spiritualist Alliance was founded, and was incorporated in 1896. The chief work of the society has been to maintain and expound the principles of spiritualism. There are local organizations in almost all towns of any importance. The belief of spiritualism is that our existence in this world is but one stage in an endless career; that the whole material world exists simply for the development of spiritual beings, death being but a transition from this existence to the first grade of spirit life; that our thoughts and deeds here will affect our conditions later; and that our happiness and progress depend wholly on the use we make of our opportunities and faculties in this plane. Among spiritualists are found persons of every belief, from the Roman Catholic to the Unitarian, as it does not modify the creeds or dogmas of any sect. In France is a class of spiritualists who believe existence of the soul is alternating spirit life and reincarnation.

Spitz, or **Pomeranian Dog,** the result of a cross from the Eskimo dog, the native dog of the Arctic regions. The spitz is about the size of the spaniel, with a sharp-pointed face and an abundant white coat sometimes of great beauty. Other colors are known, including black. It is comparatively common in the United States.

Spitzbergen, a group of three large and several small islands in the Arctic Ocean, nearly equidistant between Greenland and Nova Zembla, the largest being West Spitzbergen and Northeast Land. Very little is known of their interior, but the coasts have been repeatedly explored, and present immense glaciers and mountain chains, some of which exceed 4,000 feet in height. The climate is intensely cold; and vegetation is confined to a few plants of rapid growth. For four months in winter the sun is below the horizon, and for an equal period in summer the sun is always above the horizon. The larger forms of animal life are foxes, bears, and reindeer. The minerals are known to include marble and good coal.

Spleen, one of the abdominal glands at the left side of the body, close to the stomach and pancreas. It is somewhat oval-shaped and concave internally, where it is divided by a fissure named the ilium. Here blood-vessels enter and leave the organ, and the nerves also enter. The upper extremity of the spleen is thick; the lower, which is in contact with the colon, is more pointed. The average length of the spleen is 5 inches, its breadth 3 or 4 inches, and its thickness 1 or 1½ inches. Its weight is about seven ounces. The spleen is a meshwork of fibers or trabeculæ, supporting a soft matter named the spleen pulp. Microscopically examined, the latter is found to consist of blood corpuscles in a state of disintegration. The spleen substance also includes certain small round bodies, attached to the sheaths of the blood-vessels of the spleen, and named Malpighian or splenic corpuscles. During digestion the spleen increases in size, but under starvation it decreases, and the Malpighian bodies disappear. This organ may be excised from man and other animals without impairing the health, hence we may conclude that its functions are capable of being carried on by some other glands. In all probability the spleen is one of the blood glands, of which the thymus and thyroid glands, and indeed the whole lymphatic system, are examples. In the spleen the blood corpuscles undergo some changes; possibly the organ may be the seat of manufacture of red blood corpuscles, as well as of their final disintegration.

Splint, or **Splent,** a bony enlargement on a horse's leg, between the knee and fetlock, usually appearing on the inside of one or both fore legs, frequently situated between the large and small cannon bones, depending on concussion, and most common in young

horses that have been rattled rapidly along hard roads before their bones are consolidated.

Splint, in surgery, a mechanical contrivance for keeping a fractured limb in its proper position, and for preventing any motion of the ends of the broken bone; they are also employed for securing perfect immobility of the parts to which they are applied in other cases, as in diseased joints, after resection of joints, etc.

Spofford, Ainsworth Rand, an American librarian; born in Gilmanton, N. H., Sept. 12, 1825. He was a journalist to 1861, when appointed chief assistant librarian of the Congressional Library, and was librarian in 1864-1897, when he became again chief assistant. He was famed for a comprehensive and accurate knowledge of books and their contents, and besides many essays and articles on historical, literary, and scientific subjects for the current journals published: "The American Almanac," for several years; and, with others, edited "Library of Choice Literature," "Library of Wit and Humor," etc.

Spofford, Harriet Prescott, an American author; born in Calais, Me., April 3, 1835; was graduated at the Pinkerton Academy in Derry, N. H., in 1852. In 1859 she published "In a Cellar" in the "Atlantic Monthly." This story made her reputation, and thereafter she became a contributor to the chief periodicals of the country.

Sponge, Spongida, a horny substance valued for its ready imbibition of water, and consisting of the keratode skeleton of certain Protozoa or lowest animals. A sponge is thus a colony of living animals. Such a colony communicates with the outer world by means of certain openings (capable of being closed at will), traceable in an ordinary sponge, and of which the larger are named oscula and the smaller pores. By the latter, currents of water are continually drawn into the sponge, while through the oscula currents are as continually discharged. These currents are kept up through the action of the minute vibratile processes named cilia, which are limited usually to certain spaces of the canals named ciliated chambers. The main use of this circulation in the sponge is evidently nutritive. Particles of food are thereby swept into the organisms, while oxygen is also inhaled and effete matters exhaled.

The sponges of commerce come from the Eastern Mediterranean Sea, the West Indies, and the coasts of Florida. In the Archipelago, Crete, Cyprus, on the coasts of Asia Minor, Syria, Barbary, and the Bahama Islands, sponge fisheries constitute a very important industry. The finest sponges are obtained from Turkey.

Sponge has many uses besides those of the household. It is indispensable to the surgeon; mattresses, etc., are stuffed with it; and it is also employed as a filter and as a polishing material for fine surfaces.

Spontini, Gasparo, an Italian composer; born in Majolatti, near Jesi, in the Roman States, Nov. 14, 1774. He was educated at the Conservatorio de la Pieta of Naples, and began his career when 17 years of age as the composer of an opera, "The Punctilio of Women." This was followed by some 16 operas, produced within six years, for the theaters of Italy and Sicily, but not a note of which has survived. In 1803 Spontini went to Paris; in 1807 he was appointed music director to the Empress Josephine; and in 1808 he produced his most famous work "The Vestal" with brilliant and decisive success. His "Fernando Cortez" appeared in 1809; and the next year witnessed his appointment to the directorship of the Italian Opera in Paris, which he held for 10 years. In 1820 the magnificent appointments offered by the court of Prussia tempted him to leave Paris for Berlin, in which capital his three grand operas, "Nourmahal" (founded on "Lalla Rookh"), "Alcidor," and "Agnes of Hohenstauffen," were produced with great splendor. Spontini continued to reside as first chapel-master in Berlin till the death of the king in 1840. The latter period of his sojourn at Berlin was embittered by professional disputes; and in 1842 he repaired to Paris, where in 1839 he had been elected one of the five members of the Academie des Beaux Arts. He died in Majolatti, Jan. 14, 1851.

Spoon, a domestic utensil, having a shallow bowl at the end of a handle, and used for taking up and conveying to the mouth liquids or liquid food. Spoons are made of various sizes and materials, according to the particular purpose for which they are intended.

Spoonbill, in ornithology, any individual of the genus Platalea; specifically, the white spoonbill, found over the greater part of Europe and Asia and the N. of Africa. The adult male is about 32 inches long; plumage white with pale pink tinge; at the junction of the neck with the breast there is a band of buffy yellow; the naked skin on the throat is yellow; legs and feet black; bill about eight inches long, very much flattened and grooved at the base, the expanded portion yellow, the rest black. There is a white occipital crest in both sexes. The spoonbill possesses no power of modulating its voice. The windpipe is bent on itself, like the figure 8, the coils applied to each other and held in place by a thin membrane. This peculiarity does not exist in young birds. The roseate spoonbill, a native of the United States, has rose-colored plumage.

THE SPOONBILL.

Sporadic, a term applied to any disease that is commonly epidemic or contagious, when it attacks only a few persons in a district and does not spread in its ordinary manner. The conditions which determine the occurrence of epidemic or contagious diseases in a sporadic form are unknown. Among the diseases which occur in this form may be especially mentioned cholera, dysentery, measles, scarlatina, and smallpox.

Spore, the reproductive body in a cryptogam, which differs from a seed in being composed simply of cells and not containing an embryo. Called also sporules. Applied also to the reproductive bodies produced either singly or at the tips of the fruit-bearing threads in fungi. Plants reproduce themselves in two different ways, "vegetatively" or "truly." The vegetative mode of reproduction is merely a continuous growth of parts already formed. It is quite common in nature. In the true mode of reproduction the growth is not continuous. Certain cells of a plant are set apart for this function. These cells are called spores. In plants higher than the Thallophytes such cells do not grow directly into a plant like that from which they have come, but they give rise to a plant which in its turn, when it reaches maturity, produces cells of two sorts, male and female, which unite with one another, and then from the new cell of dual origin there grows a plant like that from which the spore originally came. Thus, on the under surface of the fronds of ferns there may often be seen many small spore cases. The spores fall to the ground, and produce a little green plant called the prothallium of the fern. The prothallium produces the sex elements. These unite, and from their union grows a new "fern." This indirect mode of reproduction is spoken of as the alternation of generations.

Sporting Plant, in botany, the name given by gardeners to plants which have suddenly produced a single bud with a new and sometimes widely different character from that of the other buds. Darwin calls them bud variations, and says that they can be propagated by grafts, etc., and sometimes by seed. They rarely occur in plants in a state of nature, but are common under culture.

Spotted Wild Cat, an Indian species, about 18 inches long, the tail being about a foot more. It is gray, spotted with black, and the ears are tufted, indicating a relationship with the lynxes.

Spottsylvania Court-house, a small village in Virginia, 55 miles N. by W. of Richmond, the scene of one of the most desperate battles of the

American Civil War. On May 10, 1864, during the Wilderness campaign, Grant attacked Lee in his earthworks, and was repulsed with dreadful slaughter; yet on the next day he wrote to the Secretary of War, "I propose to fight it out on this line if it takes all summer," and on the 12th repeated the assault, when Hancock's corps carried and held the "bloody angle." The next morning Lee, unable to bear his share of the heavy losses, withdrew within an inner line of entrenchments, and on the 20th Grant, having failed to dislodge him, moved round his flank toward Richmond.

Sprague, Austin Velorous Milton, an American inventor; born in Rochester, N. Y., May 28, 1840. He went to the Pennsylvania oil fields in 1865, and turned his attention to improving methods of oil production. In order to prevent boiler explosions because of the use of brackish water, he conceived and executed a plan for raising the water of the Allegheny river to a reservoir whence it flowed to feed several hundred boilers. He was the inventor of various household articles; improvements in laundry machinery; disinfectors, sterilizers, and thermærotherapic apparatus; introduced steam for the sterilization of surgical instruments and dressings, and for the disinfection of textile fabrics, etc.

Sprague, Charles, an American poet; born in Boston, Mass., Oct. 26, 1791; was the author of "The Winged Worshippers"; "Curiosity"; and "The Family Meeting." A collection of his works entitled "Poetical and Prose Writings" was published in 1841. Died in Boston, Jan. 22, 1875.

Sprague, Charles Ezra, an American author; born in Nassau, N. Y., Oct. 9, 1842. He was an officer through the Civil War, and afterward the secretary and president of a New York bank. He was the editor of "Volaspodel," the organ of the proposed international language called Volapuk.

Sprague, William, an American statesman; born in Cranston, R. I., Sept. 12, 1830; was governor of Rhode Island in 1860-1863; raised a battery of light artillery with which he took part in the battle of Bull Run; served with distinction in the Peninsular campaign; and was United States Senator in 1863–1875. Formerly a millionaire manufacturer he became bankrupt thirty years ago, but was permitted to save a portion of his property, and lives in comfort at Narragansett Pier, with his second wife, whom he married about twenty years ago, after his first wife, the late Kate Chase Sprague, daughter of the late Chief Justice Salmon P. Chase, had been divorced from him.

Sprain, or **Strain,** a term employed in surgery to designate a violent stretching of tendinous or ligamentous parts with or without rupture of some of their fibers. Sprains are very frequent in all the joints of the upper limbs, especially in the wrist and the articulations of the thumb. In the lower extremity the ankle is the joint by far the most frequently affected; and this is accounted for anatomically by the small size of the articular surfaces, the great weight the astragalus (the bone presenting the lower articular surface) has to support, and the unyielding nature of the lateral ligaments. In slight sprains of this joint the ligaments are only stretched or slightly lacerated, but in more severe cases they may be completely torn through. Sprains of the ankle are sometimes mistaken for fractures, and vice versa; and the two injuries may coexist.

Sprenger, Jacob, of the Order of Preachers, and Professor of Theology in Cologne, and Henricus Institor (Latinized form of Kramer), two names of enduring infamy as the authors of the famous "Malleus Maleficarum" or "Hexenhammer" (1489), which first formulated in detail the doctrine of witchcraft, and formed a text-book of procedure for witch trials. They were appointed inquisitors under the bull "Summis desiderantes affectibus" of Innocent VIII. in 1484, and their work is arranged in three parts — "Things that pertain to Witchcraft"; "The Effects of Witchcraft"; and "The Remedies for Witchcraft." It discusses the question of the nature of demons; the causes why they seduce men, and particularly women; transformations into beasts, as wolves and cats; and the various charms and exorcisms to

be employed against witches. The writers detail the extraordinary dangers to which they were exposed in their task, and how all the artillery of hell had been employed against themselves in vain, and they tell with complete composure of mind how in one place 40, in another 50, persons were burned by their means. They admit bodily transmission of sorcerers through the air, and relate numerous cases of the devilish malice of witches on horses and cattle as well as mankind; and in the latter part, consisting of 35 questions, give minute directions for the manner in which prisoners are to be treated, the means to be used to force them to a confession, and the degree of evidence required for a conviction of those who would not confess. The book contains no distinct allusion to the proceedings at the Witches' Sabbath any more than did the "Formicarium" (1440) of John Nider, whose fifth book is devoted to the subject of sorcery.

Spring, an elastic substance of any kind, having the power of recovering, by its elasticity, its natural state, after being bent or otherwise forced, interposed between two objects in order to impart or check motion or permit them to yield relatively to each other. Springs are made of various materials, as india-rubber, strips of wire or steel coiled spirally, steel rods or plates, etc., and are used for many purposes; as, for diminishing concussions in carriages, for motive power, acting through the tendency of a metallic coil to unwind itself, as in clocks and watches; to measure weight and other forces as in the spring balance, etc.

In physical geography and geology, an overflow of water or other liquid. When rain falls on a porous soil it is rapidly absorbed, the surface of the soil being soon dry again. Meanwhile the water has percolated downward till it has, at a greater or less depth, been intercepted by an impervious stratum, where it gradually forms a reservoir. It then presses with great force laterally, and a system of subterranean drainage is established. If the impervious stratum be some distance up a hillside, the water finds its way out, not, however, all along the stratum, for the existence of rents, fissures, and inequalities confines it to a few spots. If the reservoir be on an elevation and a boring be made on a lower level to any of the branches leading from it, the water will rise in the bore to the surface and shoot up into the air to a height proportional to the pressure from the reservoir, as an artesian well, which is akin to a spring.

Spring, Leverett Wilson, an American educator; born in Grafton, Vt., Jan. 5, 1840; was graduated at Williams College in 1863, and took a theological course at the Hartford and Andover Theological Seminaries; and in 1886 he became professor of English literature at Williams College. He is the author of "Kansas," "Mark Hopkins," etc.

Springbok, in zoölogy, an antelope exceedingly common in South Africa. It is about 30 inches high, the horns lyrate, very small in the female; color yellowish dun, white beneath. Two curious folds of skin ascend from the root of the tail, and terminate near the middle of the back; they are usually closed, but open out when the animal is in rapid motion, and disclose a large triangular white space, which is otherwise concealed.

Springer, a name given to several varieties of the spaniel. The ears are long and pendulous, and the color usually white with red spots. It is employed to start or spring birds from coverts. The chief breeds are the Clumber, Sussex, and Norfolk.

Springer, Reuben Runyan, an American philanthropist; born in Frankfort, Ky., Nov. 16, 1800. Afterward he was engaged as a clerk on a steamboat plying between Cincinnati and New Orleans. He soon bought an interest in this boat, with which he laid the foundation of his wealth. Subsequently he acquired a large interest in a flourishing grocery business in Cincinnati; but owing to ill health retired in 1840. He was a liberal supporter of charitable enterprises. Died in that city, Dec. 10, 1884.

Springer, William McKendree, an American jurist; born in Sullivan co., Ind., May 30, 1836; was graduated at the Indiana State University in 1858. He was a member of Con-

gress in 1875–1895. He was the author of the law known as the "Springer Bill," which gave a judicial system to the Indian Territory and established the Territory of Oklahoma. He also introduced the bill creating the States of North and South Dakota, Washington, and Montana. In 1895–1899 he was United States judge for the Northern District of Indian Territory, and chief-justice of the United States Court of Appeals for Indian Territory. He then established himself in law practice in Washington, D. C.

Spring Hill College, an educational institution in Mobile, Ala.; founded in 1836 under the auspices of the Roman Catholic Church.

Spring Tide, the tide which happens at or soon after the new and full moon, which rises higher than common tides. At these times the sun and moon are in a straight line with the earth, and their combined influence in raising the waters of the ocean is the greatest, consequently the tides thus produced are the highest.

Spruce Beer, a drink made from the spruce tree. Spruce beer is made by adding the essence of spruce to water in which sugar or treacle has been dissolved, in the proportion of about four ounces of essence of spruce to 10 pounds of sugar or three quarts of treacle and 10 or 11 gallons of water, with about half a pint of yeast. Various spices are used for flavoring.

Spruce Fir, in botany, a fine evergreen which sometimes reaches a height of 150 feet, with a straight, though not very thick trunk and a regular pyramidal form. Leaves scattered equally round the twigs; four-cornered, mucronate, dull green; cones cylindrical, pendulous, with blunt, sinuate, slightly toothed scales. It is a native of the N. of Germany and Norway, whence it is often called the Norway spruce.

The white spruce fir has the leaves somewhat glaucous, rather pungent; the cones narrow, oval, tapering, with even, undivided scales. It is found in North America, where it reaches the height of 40 to 50 feet. The black spruce is from the very cold parts of North America. The leaves are short, the cones ovate oblong, obtuse, with ragged, round scales. It grows to 70 or 80 feet high. The timber is very valuable. The black spruce of British Columbia and the red spruce are also North American.

Spur, a metal instrument composed of a shank, neck, and prick or rowel, fastened to the heel of a horseman to goad his horse to greater speed.

Spurge, a vast genus (upward of 700 species) of herbs, shrubs, or soft-wooded trees with fleshy branches, abounding in milky juice.

Spurgeon, Charles Haddon, an English preacher; born in Kelvedon, England, June 19, 1834. In 1854 he entered on the pastorate of the New Park Street Chapel, London, where his preaching proved so attractive that in two years' time the building had to be greatly enlarged. His hearers continuing to increase, the Surrey Music Hall was for some time engaged for his use; and finally his followers built for him his well-known "Tabernacle" in Newington Butts, opened in 1861. The evangelistic and philanthropic agencies in connection with this immense chapel comprise the Stockwell Orphanage, a pastors' college, where hundreds of young men are trained for the ministry; the Golden Lane Mission, etc. Spurgeon preached in the Tabernacle every Sunday to thousands of hearers. His sermons were published weekly from 1854, and yearly volumes were issued from 1856. They had an enormous circulation, many of them being translated into various languages. He died in Mentone, France, Jan. 31, 1892.

Spy, a secret emissary sent into the enemy's camp or territory to inspect their works, ascertain their strength and their intentions, to watch their movements, and report thereon to the proper officer. By the laws of war among all civilized nations a spy is subjected to capital punishment. To be treated as a spy one must first be caught in the enemy's territory, and in dress other than the adopted military uniform of his country. It must also be clearly shown that the object of the accused person is to gain information for the enemy which it would be to their advantage to know. If, when captured, the prisoner can show that his errand in getting through was of a personal nature, or that he was

trading with the enemy, he can only be held as a prisoner of war. In trying a spy his military rank counts for much. An officer of high rank receives a more thorough trial than a private, though both are tried by court-martial. In the United States the verdict is sent to the President or the Secretary of War or Navy, for approval before execution. When a spy is caught in the act all these formalities are omitted. He is tried by a drum-head court-martial composed of the first five or more officers handy; he is allowed to make an explanation and a verdict is rendered without much deliberation. If he is found guilty the verdict is sent to the highest commanding officer in camp, and on his approval the sentence is carried out, after which a full report is made to the President. The two most famous spies in American history are Nathan Hale and Maj. John Andre, both of whom were captured when about to pass with their information back to their own lines, and the evidence against both was conclusive. Hale received only a trial by drum-head court-martial, while Andre had every opportunity to prove his innocence.

Squadron, in military language, a force of cavalry commanded by a captain, and averaging from 120 to 200 men. Each squadron is composed of two troops, each commanded by a captain for purposes of administration, but united under the senior for service in the field. Four squadrons form a regiment. The squadron is frequently considered the tactical unit of cavalry. As a naval term, a division of a fleet; a detachment of ships of war employed on a particular service or station, and under the command of a junior flag officer.

Squatter, one who without a title settles on new or uncultivated land. In the early days of the United States its meaning was confined to the foregoing sense. In Australia, one who occupies an unsettled tract of land; as a sheep farm under lease from government at a nominal rent.

Squaw Berry, in New England the fruit of the wintergreen is sometimes called squaw berry: but in Utah, Arizona, Southern California, and New Mexico the name is given to the fruit of a shrub five to eight feet high, out of the twigs of which the Indians make their baskets. This fruit, which is red and very sour, is gathered in the summer in great quantities by the Indian squaws, and is eaten both fresh and dried. A very pleasant drink also is made by washing the berries in water. The twigs, which are tougher and more durable than willow, have a peculiar scent which never leaves articles made of it. Baskets made of them are very strong, will hold water, and are even used to cook in, hot stones being dropped in from time to time till the food is done.

Squaw Root, a singular scaly plant, native of America, found growing in clusters among fallen leaves in oak woods.

Squid, a popular name of certain cuttle fishes included in several genera, of which the most familiar is that of the calamaries.

Squier, Ephraim George, an American archæologist; born in Bethlehem, Pa., June 17, 1821. While a journalist at Chillicothe, O., he prepared an account of discoveries in ancient mounds (he being the principal authority on the subject) for the "Smithsonian Contributions to Knowledge" (1848). He was charge d'affaires to the Central American States (1849), consul-general to Peru (1863), and to Honduras (1868). He died in Brooklyn, N. Y., April 17, 1888.

Squire, originally an attendant on a knight; a knight's shield or armor-bearer; now a title commonly given to justices of the peace.

Squirrel, in zoölogy, a popular name for any of the Sciuridæ; widely distributed in America, Europe, the Caucasus, Southern Siberia, and probably in Persia. It is a little animal with bright black eyes; from 8 to 10 inches in length, with a bushy tail nearly as long; color gray or reddish-brown, white beneath, but the hue varies with the seasons, in Lapland and Siberia the upper surface becomes gray, and in Central Europe is sprinkled with gray in the winter. Squirrels haunt woods and forests, nesting in trees, and displaying marvelous agility among the branches. They feed on nuts, acorns, beech mast, which

they store up, birds' eggs, and the young bark, shoots, and buds of trees, doing no small amount of damage. They pass the winter in a state of partial hibernation, waking up in fine, warm weather, when the provision laid up in the summer is made use of for food. They are monogamous, and the female produces three or four young, usually in June. In Lapland and Siberia they are killed in great numbers for the sake of their winter coat. This, though valuable, is inferior to the fur of the North American gray squirrel.

Squirrel Monkey, from South America. It is about 10 inches long, with a tail half as much again; fur olive-gray on the body, limbs red, muzzle dark. They are affectionate and playful in disposition.

Staal, Marguerite Jeanne, Baroness de, a French author; born in Paris, May 30, 1684. She had a sound education at the convent of Saint Louis at Rouen, and at 27 was attached to the person of the imperious and intriguing Duchesse de Maine at the little court of Sceaux. Here she saw before her eyes all that comedy of life which she was later to describe with such penetrating insight. In 1735 she married Baron de Staal, an officer of the Guard. Her "Memoires" (4 vols. 1755), show intellect and observation, as well as remarkable mastery of subtle irony, and are written in a style clear, firm, and individual. Her "Complete Works" appeared at Paris in two volumes in 1821. She died in Paris, June 16, 1750.

Stabat Mater, in music, a well-known Latin hymn on the Crucifixion, sung during Passion week in the Roman Church.

Staff, a kind of artificial stone used for covering and ornamenting buildings. It is made chiefly of powdered gypsum or plaster of Paris, with a little cement, glycerin, and dextrine, mixed with water until it is about as thick as molasses, when it may be cast in molds into any shape. To strengthen it coarse cloth or bagging, or fibers of hemp or jute, are put into the moulds before casting. It becomes hard enough in about a half hour to be removed and fastened on the building in construction. Staff may easily be bent, sawed, bored, or nailed. Its natural color is murky white, but it may be made of any tint to resemble any kind of stone, and may be painted and gilded. It is fire-proof and waterproof and if cared for will last a long time, as it may be easily repaired with a trowel and a pailful of the mixture.

Staffa, a celebrated island on the W. of Scotland. It forms an oval uneven table-land, rising at its highest to 144 feet above the water, 1½ miles in circumference, and 71 acres in area. The most remarkable feature of the island is Fingal's or the Great Cave, the entrance to which is formed by columnar ranges on each side, supporting a lofty arch. The entrance is 42 feet wide, and 66 feet high, and the length of the cave is 227 feet. The floor of this marvelous chamber is the sea, which throws up flashing and many-colored lights against the pendant columns, whitened with calcareous stalagmite, that form the roof, and against the pillared walls of the cave.

Stafford, Wendell Phillips, an American jurist; born in Barre, Vt., May 1, 1861; received an academic education and was graduated at the Law Department of Boston University in 1883. In 1900 he was made judge of the Supreme Court of that State. He was author of "Eurylochus Transformed"; "Wendell Phillips"; etc.

RED DEER: HIND AND CALF.

Stag, or **Red Deer,** a typical species of deer, occurring in the N. of

Europe and Asia. It was once found throughout the whole of Great Britain, but is now confined to the Scotch Highlands. The horns or antlers are round and have a basal snag in front. The females are hornless and are named hinds. The horns of the first year are mere bony projections; they advance in development during the second year, when the stag is named a brocket. In each succeeding year the horns grow more and more branched, the stag being named a hart

STAGS.

in its sixth year, when the horns may be said to reach their maximum size. As in all deer, the horns are shed annually. The average height of a full-grown stag is about four feet at the shoulders; the winter coat is greyish-brown; in summer, brown is the prevailing tint. The food of the stag consists of grasses and the young shoots of trees, lichens forming the greater part of its food in winter. The stag is a powerful runner and swimmer. Driven to bay, it becomes a formidable adversary to the largest and most powerful staghound, or even to man himself. The pairing season occurs in August, and the males then engage in combats for the females and become peculiarly fierce. The flesh is somewhat coarse.

Stag Beetle, in entomology, one of the larger insects, the male being about two inches long. Their projecting mandibles are denticulated, and somewhat resemble stag's horns; with these they can inflict a pretty severe wound. The stag beetle is common in forests, and flies about in the evening in summer. Some of the tropical stag beetles are very brilliantly colored.

Stage, in theaters and some other places of amusement, a platform elevated above the ground, and specifically applied to the raised floor on which performances are exhibited.

Stage-Coach, a vehicle for carrying passengers on regular routes, the journey being accomplished by stages. Such vehicles were formerly universal in the United States and Great Britain, but the railway system has led to their almost entire discontinuance, except in localities to which the railway has not reached.

Staggers, a popular term applied to several diseases of horses. Mad or sleepy staggers is inflammation of the brain, a rare but fatal complaint, marked by high fever, a staggering gait, violent convulsive struggling, usually terminating in stupor. Grass or stomach staggers is acute indigestion, usually occasioned by overloading the stomach and bowels with tough hard grass, vetches, or clover, a full meal of wheat, or other indigestible food.

STAGHOUND.

Staghound, the Scotch deerhound, called also the wolf dog, a breed that

is rapidly dying out. These dogs hunt chiefly by sight and are used for stalking deer, for which purpose a cross between the rough Scotch greyhound and colley or the foxhound is also often employed. True staghounds are wiry-coated, shaggy, generally yellowish-gray, but the most valuable are dark iron-gray, with white breast. They are of undaunted courage and great speed, and should stand not less than 28 inches high.

Stairs, a succession of steps raised one above the other, affording means of communication between two points at different heights in a building, etc. The separate division, open space, or apartment in which the stair is placed is called the staircase.

Stalactite and **Stalagmite,** formations of carbonate of lime. Stalactitic formations occur chiefly in long and more or less fantastic-shaped masses suspended from the roofs of caverns in limestone rocks. Stalactites appear to be continually forming; water containing carbonate of lime held in solution by carbonic acid, trickling through crevices in the roofs of the caverns, gradually during its exposure to the air loses its carbonic acid, and consequently deposits its carbonate of lime; the water passing over the portion first deposited gradually adds to it, and eventually gives the carbonate of lime its great length and stalactitic character. The flatter deposits, called stalagmites, are formed on the floor of the cavern by the water there depositing that portion of its carbonate of lime which is not separated during the formation of the stalactite. The most remarkable instances of their occurrence are Luray (Virginia) and Mammoth (Kentucky) Caves in the United States.

Stall, Sylvanus, an American clergyman: born in Elizaville, N. Y., Oct. 18, 1847; was graduated at Pennsylvania College, Gettysburg, Pa., in 1872; studied theology there in Union Theological Seminary; was ordained in the Lutheran Church; and held various pastorates. His publications include "How to Pay Church Debts"; "Talks to the King's Children"; etc.

Stamen, in botany, the male organ of a flower, called by the old botanists an apex and a chive.

Stammering, or **Stuttering,** an infirmity of speech, the result of failure in coördinate action of certain muscles and their appropriate nerves. It is analogous to some kinds of lameness; to cramp or spasm, or partial paralysis of the arms, wrists, hands, and fingers, occasionally suffered by violinists, pianists, and swordsmen; to the scrivener's palsy, or writer's cramp, of men who write much. For speech — like writing, fencing, fingering a musical instrument, and walking — is a muscular act involving the coördinate action of many nerves and muscles.

Stamp Act, an act for regulating the stamp duties to be imposed on various documents, specifically an act passed by the British Parliament in 1765, imposing a stamp duty on all paper, parchment, and vellum used in the American colonies, and declaring all writings on unstamped paper, etc., to be null and void. The indignation roused by this act was one of the causes of the Revolutionary War.

Stamp Duty, a tax or duty imposed on pieces of parchment or paper, on which many species of legal instruments are written. The internal revenue acts of the United States of 1862, and subsequent years, required stamps for a great variety of subjects, under severe penalties in the way of fines and invalidating of written instruments; stamps for liquors and tobacco are still in use.

Stamp Mill, a contrivance of great utility in reducing hard mineral ores to a pulverized condition. It consists of an engine containing a series of heavy iron shod pestles moved by water or steam power.

Standard, a flag or ensign round which men rally, or under which they unite for a common purpose; a flag or carved symbolical figure, etc., erected on a long pole or staff, serving as a rallying point or the like. The ancient military standard consisted of a symbol carried on a pole like the Roman eagle, which may be considered as their national standard. Each cohort had its own standard by which it was known, and which was surmounted with a figure of Victory, an open hand, etc., the pole being decorated with circular medallions, etc.

Standard, Battle of the, a battle in which David I. of Scotland, who had espoused the cause of Maud against Stephen, was signally defeated by the English under the Bishop of Durham. It was fought in the neighborhood of Northallerton, in Yorkshire, on Aug. 22, 1138, and it received its name from the fact that the English forces were gathered round a tall cross mounted on a car, and surrounded by the banners of St. Cuthbert, St. Wilfred, and St. John of Beverley.

Standard Time, a system of time-reckoning, chiefly for the convenience of railroads in the United States. The United States, beginning at its extreme E. limit and extending to the Pacific coast, is divided into four time-sections: E., central, mountain, and Pacific. The E. section, the time of which is that of the 75th meridian, lies between the Atlantic Ocean and an irregular line drawn from Detroit, Mich., to Charleston, S. C. The central, the time of which is that of the 90th meridian, includes all between the last-named line and an irregular line from Bismarck, N. D., to the mouth of the Rio Grande. The mountain, the time of which is that of the 105th meridian, includes all between the last-named line and the W. boundary of Montana, Idaho, Utah, and Arizona. The Pacific, the time of which is that of the 120th meridian, includes all between the last-named line and the Pacific coast. The difference in time between adjoining sections is one hour.

Standing Stones, rude unhewn blocks of stone in an upright position in almost every part of the world, in Europe, India, Persia, and even in Mexico. Whatever may have been the period of their erection, their great size would necessitate the knowledge of the use of mechanical power. They are found more frequently in Great Britain, and were supposed to belong to the time of the Druids; but modern investigations have deprived this theory of its certainty.

Standish, Myles, an American soldier; born in Duxbury, Lancashire, about 1584; served in the Netherlands; and, though not a member of the Leyden congregation, sailed with the "Mayflower" colony to Massachusetts in 1620, and became the champion of the Pilgrims against the Indians. During the first winter his wife died, and the traditional account of his first effort to secure another partner has been made familiar by Longfellow. In 1622, warned of a plot to exterminate the English, he enticed three of the Indian leaders into a room at Weymouth, where his party, after a desperate fight, killed them, and a battle that followed ended in the flight of the natives. Standish was the military head of the colony, and long its treasurer. A monument, 100 feet high and surmounted by a statue, has been erected to him on Captain's Hill at Duxbury. In 1632 he settled at Duxbury, Mass., where he died, Oct. 3, 1656.

Stand-Pipe, a boiler supply pipe of sufficient elevation to enable the water to flow into the boiler notwithstanding the pressure of the steam. In hydraulic engineering, a stand-pipe is a vertical pipe, arranged as a part of the main in waterworks to give the necessary head to supply elevated points in the district, or to equalize the force against which the engine has to act.

Stanford, Jane Lathrop, an American philanthropist; born in Albany, N. Y., Aug. 25, 1825; was the wife of Leland Stanford, the founder of the Leland Stanford Jr. University. She built and endowed the Children's Hospital in Albany, N. Y., at a cost of $200,000; gave $160,000 to the kindergartens in San Francisco, Cal., and after the death of her husband in 1893 devoted herself to the development and support of the Leland Stanford University. In 1901 she supplemented her gifts to the university by turning over to its trustees stocks valued at $18,000,000; her residence in San Francisco, valued at $400,000, for a museum and art gallery; and 1,000,000 acres of land worth $12,000,000. These gifts swelled the endowment of the university to more than $45,000,000, making it the most richly endowed educational institution in the world.

Stanford, Leland, an American philanthropist; born in Watervliet, Albany co., N. Y., March 9, 1824. In

1852 he went to California, [illegible] engaged in mining, but in 1855 removed to San Francisco and there engaged in business, laying the foundation of a fortune estimated at more than $50,000,000. He was elected president of the Central Pacific railroad in 1861; was governor of California in 1861–1863; and in 1885 was elected to the United States Senate. In memory of a deceased son, Leland Stanford, Jr., he gave $20,000,000 for the founding of Leland Stanford University at Palo Alto, Cal. He died in Palo Alto, June 21, 1893.

Stanhope, the name of a noble English family. James, 1st Earl of Stanhope; born in Paris, France, in 1673. He entered the army, served as Brigadier-General under the Earl of Peterborough at the capture of Barcelona in 1705, was appointed Commander-in-Chief of the British forces in Spain, and in 1708 took Port Mahon. He died in London, Feb. 5, 1721. Charles, the 3d earl; grandson of the preceding; born in London, England, Aug. 3, 1753; was celebrated chiefly as an inventor. His chief inventions were an arithmetical machine and a printing press, which bears his name. He died in London, Dec. 15, 1816. Philip Henry, 5th earl, grandson of the preceding; born in Walmer, Kent, Jan. 31, 1805. He filled various official positions in the ministry of Sir Robert Peel, but he was best known under his title of Lord Mahon, as the author of a "History of the Succession War in Spain," etc. He died in Bournemouth, Hampshire, Dec. 24, 1875. Lady Hester Lucy, an English traveler; daughter of the 3d Earl Stanhope, born in Chevening, England, March 12, 1776. For many years she resided with her uncle, William Pitt. Her "Memoirs" were published in 1845–1846. She died in Mar Elias, Syria, June 23, 1839.

Stanislaus Augustus, Stanislaus II., the last King of Poland, son of Count Stanislaus Poniatowski; born in Wolczyn, Lithuania, Jan. 17, 1732. Sent by Augustus III., of Poland on a mission to St. Petersburg, he became a favorite with the grand-princess (afterward the Empress Catherine), by whose influence he was crowned King of Poland at Warsaw in 1764. The nobility forcibly compelled the king to abdicate (1771). He died in St. Petersburg, Feb. 12, 1798, as a pensioner of the Emperor Paul I.

Stanislaus Leszczynski, Stanislaus I., King of Poland; born in Lemberg, Galicia, Oct. 20, 1677. He was elected and crowned (1705), but after the disastrous battle of Poltava (1709), he had to flee from Poland. He found refuge in France ultimately where his daughter Maria became wife to Louis XV. His writings were published under the title of "Works of the Beneficent Philosopher" (1765). He died Feb. 23, 1766.

Stanley, Henry Morton, an American explorer; born near Denbigh, Wales, in 1840; name originally John Rowlands. When three years old he became an inmate of the poorhouse at St. Asaph, where he made such progress in the school that he was employed as a teacher of other children at Mold, Flintshire, when he went away at the age of 13. Two years later he sailed as cabin boy on board a vessel bound for New Orleans, and in that city he found a friend in a merchant, who adopted him and gave him his own name, but died leaving no will. Young Stanley, left to his own resources, went to California, where he sought his fortune in the gold mines. When the Civil War broke out he became a soldier in the Confederate army. He was made prisoner, and subsequently took service in the United States navy, becoming acting ensign on the iron clad "Ticonderoga." After the close of the war he became a newspaper correspondent, writing a series of letters from Crete and Asia Minor. When the English expedition was sent against King Theodore of Abyssinia in 1867 he accompanied it as commissioner of the New York "Herald." In 1868 he went to Spain to report the Carlist War for the same paper. He was called away from there in October, 1869, to go in search of Dr. David Livingstone in Africa, from whom no news had been received for more than two years. He reached Zanzibar early in January, 1871. There he organized a large expedition of 192 men, which

e sent off in five parties. His objective point was Ujiji, which he eached, and found Livingstone, Nov. 0, 1871. After remaining with the eteran explorer four months he re-urned, Livingstone refusing to give n his enterprise till he had complet-d his work. Stanley arrived at Zan-ibar in May, 1872. In 1874 he set ut on a second African expedition for he "Herald" and London "Daily 'elegraph." At Zanzibar he learned hat Livingstone had died in the utumn on the shore of Lake Bang-'eolo. He reached Victoria Nyanza n February, 1875. He was the first o circumnavigate Victoria Lake, and iscovered the Shimeeyu river. He eached England again in February, 878. Then came the Belgian enter-rise, out of which was developed the 'ree State of Kongo, with Stanley as s conductor, with large means at his isposal. Near the close of 1886 Stan-y, under the auspices of the Egyp-ian government and of English so-ieties and individuals, undertook an xpedition for the relief of Emin 'asha. For this purpose he left Eng-nd in January, 1887, and returned n 1890, after escorting Emin Bey nd a large troop of followers from he interior to the coast. Stanley's ast journey in Africa lasted 1,012 ays, of which hardly 20 were devoid f perils and tragic incidents. The ost of the expedition was $150,000. Ie wrote: "How I Found Living-tone," "Through the Dark Continent," Congo and the Founding of its Free tate," "Slavery and the Slave 'rade," "In Darkest Africa," etc. Vas made a D. C. L. of Oxford Uni-ersity in 1890, and the same year as married to Miss Dorothy Tennent n Westminster Abbey. In 1890–1891 e made a lecturing tour of the Unit-d States, and in 1895 was elected a ember of the English House of Com-ons.

Stannaries, the mines from which in is dug. The term is most generally sed with reference to the peculiar aws and usages of the tin mines in he counties of Cornwall and Devon, ngland.

Stanton, Edwin McMasters, an merican statesman: born in Steuben-ille, O., Dec. 19, 1814. In 1860 he was appointed Attorney-General of the United States. In 1862 he succeeded Simon Cameron as Secretary of War and held that office for six years. His opposition to President Johnson's plan of reconstruction led the latter to request his resignation in 1867. He refused to resign, but on Aug. 12 surrendered his office under protest to General Grant as secretary ad interim. On Jan. 13, 1868, the United States Senate reinstated him, but the President appointed Adjt.-Gen. Lorenzo Thomas to fill his place. Stanton refused to vacate the office, however, and the impeachment of the President followed. On the President's acquittal, Stanton resigned and resumed law practice. On Dec. 20, 1869, he was nominated by President Grant as an associate justice of the Supreme Court of the United States, but died before taking his seat, in Washington, Dec. 24.

Stanton, Elizabeth Cady, an American reformer; born in Johnstown, N. Y., Nov. 12, 1815; called the first Woman's Rights Convention in Seneca Falls, N. Y., in 1848; addressed the New York Legislature on the rights of married women in 1854, and in advocacy of divorce for drunkenness in 1860; and was an unsuccessful candidate for Congress in 1868. She was the author of "The History of Woman Suffrage," and other works. She died Oct. 26, 1902.

Stanton, Henry Brewster, an American abolitionist; born in Griswold, Conn., June 29, 1805. He was husband of Elizabeth Cady Stanton. He assisted in organizing the Republican party (1858–1860), and from 1868 was an editor of the New York "Sun." He published "Sketches of Reform and Reformers in Great Britain and Ireland"; and "Random Recollections." He died Jan. 14, 1887.

Stanton, Henry Thompson, an American poet; born in Alexandria, Va., June 30, 1834; studied at the United States Military Academy; served in the Confederate army throughout the Civil War, first as captain and later as major. He designed an iron tie for binding cotton bales, and was the author of "The Moneyless Man and Other Poems." He died in 1898.

Stanton, Richard Henry, an American jurist; born in Alexandria, Va., Sept. 9, 1812; was a Democratic member of Congress from Kentucky in 1849–1855, and district judge in 1868–1874. His publications include: "Code of Practice in Civil and Criminal Cases in Kentucky"; "Practical Treaties for Justices of Peace"; etc.

Stanton, Theodore, an American journalist, son of Henry B. and Elizabeth Cady; born in Seneca Falls, N. Y., Feb. 10, 1851. He was a correspondent for the New York "Tribune" at Berlin; held other important positions abroad, and has for some time past been literary representative of Harper & Brothers in Paris.

Staple, the modern form of the Anglo-Saxon word stapel, meaning a heap, or regularly piled up accumulation, of goods; hence a place where goods are stored up for sale. In the Middle Ages, when the term was in common use, a staple meant both the trading town for particular commodities and the commodities that were wont to be exposed for sale there.

Star, one of the self-luminous bodies which surround our solar system on all sides. They are distinguished from the planets by their flickering light, by the comparative constancy of their relative positions in space, and by their inappreciable diameter even when viewed by the most powerful optical instruments. The number of stars visible to the naked eye is estimated at about 5,000; and these have from an early age been grouped in constellations and classified according to their brightness or magnitude. Those belonging to the first six magnitudes are visible to the naked eye; but the telescope reveals myriads which are distinguished down to the 16th magnitude. Of modern catalogues, Argelander's "Sternverzeichniss" is the largest, enumerating more than 300,000 down to the ninth magnitude, all situated between the pole and 2° S. of the equator.

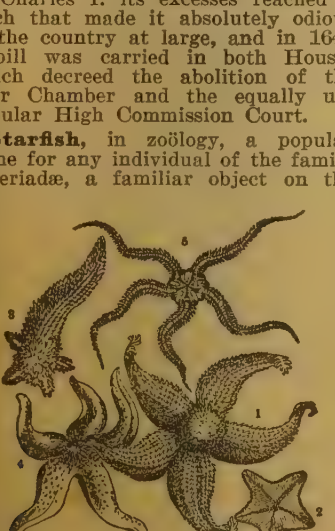
The large majority of stars are of constant magnitude, but there are certain, known as variable stars, which vary in brightness and vary periodically. Algol, in the constellation Perseus, fluctuates between the second and fourth magnitudes in a period of about three days. Mira in the constellatio Cetus is such another star, bein usually invisible to the naked ey but bursting out at intervals of 1 months with the brilliancy of a secon or third magnitude star. There ar many others, but their variations ar not so marked, and are only recogni able by careful observation. At time stars have suddenly appeared whe none were known before. The mos remarkable of these are the one d scribed by Tycho Brahe (1572), tha observed by Kepler (1604–1606), an the star of 1866 which blazed out suc denly in Corona Borealis. Near th place of the first a small telescopi star now exists, and the last was en tered as a ninth-magnitude star i Argelander's catalogue.

Star Apple, the popular name o several species of plants whose fruit i esculent. It is a native of the Wes Indies. The fruit resembles a larg apple, which in the inside is divide into 10 cells, each containing a blac seed, surrounded by gelatinous pul which is very palatable.

Star Chamber, a British tribuna which met in the old council chambe of the palace of Westminster, and i said to have received its name fro the roof of that apartment being dec orated with gilt stars, or because in i "starres" or Jewish bonds had bee kept. It is supposed to have originat ed in early times out of the exercis of jurisdiction by the king's counci whose powers in this respect ha greatly declined when in 1487 Henr VII., anxious to repress the indolenc and illegal exactions of powerful land owners, revived and remodelled them or, according to some investigators instituted what was practically an en tirely new tribunal. The statute con ferred on the Chancellor, the Treas urer, and the Keeper of the Priv Seal, with the assistance of a bisho and a temporal Lord of the Council and Chief-justices, or two other jus tices in their absence, a jurisdiction t punish, without a jury, the misde meanors of sheriffs and juries, as wel as riots and unlawful assemblies Henry VIII. added to the other mem bers of the court the president of th Council, and ultimately all the privy councillors were members of it. Th

resulting tribunal was, during the Tudor age, of undoubted utility as a means of bringing to justice great and powerful offenders who would otherwise have had it in their power to set the law at defiance. It was independent of a jury, and at that time juries were too easily terrorized by the nobles. The proceedings of the Star Chamber were viewed with distrust by the commons; but during the reign of Charles I. its excesses reached a pitch that made it absolutely odious to the country at large, and in 1641 a bill was carried in both Houses which decreed the abolition of the Star Chamber and the equally unpopular High Commission Court.

Starfish, in zoölogy, a popular name for any individual of the family Asteriadæ, a familiar object on the



STARFISHES AND BRITTLE STARS.

(1) Common Starfish (Asterias rubens); (2) Gibbous Starlet (Asterina gibbosa); (3) Common Starfish, reproducing rays; (4) Eyed Cribella (Cribella oculata); (5) Lesser Sand-star (Ophiura albida).

Atlantic coasts. The body is more or less star shaped, and consists of a central portion, or disk, surrounded by five or more lobes, or arms, radiating from the body and containing prolongations of the viscera. The mouth is situated in the center of the lower surface of the body, and the anus is either absent or on the upper surface. Locomotion is effected by means of peculiar tube-like processes, which are protruded from the under surface of the arms. They possess in a high degree the power of reproducing lost members and abound in all seas.

Star Gazer, a species of acanthopterygious fishes of the perch family, inhabiting the Mediterranean, and so called because the eyes are situated on the top of the head and directed toward the heavens. It is found in the rivers of Guiana, and acquires its name of "four eyes" from its prominent and apparently divided eyes.

Stark, John, an American military officer; born in Londonderry, N. H., Aug. 28, 1728; joined the troops under Major Rogers in the war against the French and Indians in 1754; rendered efficient service at Ticonderoga in 1758, and was actively employed in the subsequent campaign. In 1775, after the battle of Lexington he received a colonel's commission, and recruited a regiment which formed the left of the American line at Bunker Hill. In 1777 he resigned his commission, feeling slighted by Congress in its list of promotions. When, however, information was received that Ticonderoga had been taken, he set out at the head of a small force, met and defeated Baum's forces at Bennington, and likewise defeated the British reënforcements of 500 men which Burgoyne had sent to Baum's aid. For this victory he was promoted Brigadier-General. He died in Manchester, N. H., May 8, 1822.

STARLING.

Starling, in ornithology, a popular name for any individual of the genus

Sturnus, abundant in most parts of the continent of Europe, frequently visiting Northern Africa in its winter migrations. The male is about eight inches long, general color of the plumage, black, glossed wth blue and purple, the feathers, except those of the head and fore neck, having a triangular white spot on the tip. They become exceedingly familiar in confinement, and display great imitative powers, learning to whistle tunes and to articulate words and phrases with great distinctness.

Starnosed Mole, a North American genus of moles, distinguished by bearing at the extremity of their muzzle a remarkable structure of fleshy and somewhat cartilaginous rays disposed in the form of a star.

Star of Bethlehem, the celestial phenomenon described in the New Testament as accompanying the birth of Christ. Some astronomers have attempted to account for this on the hypothesis of the conjunction of two or more bright planets in about the same part of the sky at that time, but with little success. At various times since the appearance of Tycho Brahe's star in the constellation Cassiopeia in 1572, the celebrated Nova of that year, it has been suggested that this might be a variable star of long period, though there is nothing now in the vicinity of the place of this star brighter than the 12th or 13th magnitude. Nevertheless, a reported appearance of a bright star in somewhere near that part of the heavens about the middle of the 13th century combined with a still more vague account of some similar appearance a little more than 300 years earlier, furnished plenty of material for conjecture that these might possibly be former appearances of the star of 1572, giving a period of about 310 or 315 years, and a further use of the imagination would carry it back three periods more to about the time of the birth of Christ. This is all the ground there is for supposing any connection between Tycho's star of 1572 and the Star of Bethlehem. Astronomers, since the invention of the telescope, have kept a pretty close watch of the few faint stars in the immediate vicinity of the place indicated by Tycho Brahe's measures to see if any of them changed in brightness, but without any evidence of such change. Nevertheless, some years ago, as it was getting to be about time for another appearance of the star on the 310 or 315 years hypothesis, the story was revived again, and the newspapers predicted a reappearance of the "Star of Bethlehem," but no such appearance came.

Star of Bethlehem, in botany, a bulbous-rooted plant with white star-like flowers. It is naturalized in the United States.

Starr, Ella, an American journalist; born in New York city. A book of Shakespearean tales arranged for children and one on "Mythology" were left unfinished at her death in Fishkill, N. Y., Feb. 14, 1902.

Starr, Eliza Allen, an American author; born in Deerfield, Mass., Aug. 29, 1824. In 1856 she settled in Chicago, Ill., and devoted her time to teaching and to literary work. Her publications include "Poems"; "Patron Saints"; "Pilgrims and Shrines"; etc. In 1900 she received a cameo medallion from Pope Leo XIII. in recognition of her literary work. She died in Durand, Ill., Sept 9, 1901.

Starr, Frederick, an American educator; born in Auburn, N. Y. Sept. 2, 1858; was Professor of Sciences at the State Normal School Lock Haven, Pa., in 1883–1884; had charge of the Department of Anthropology at the American Museum of Natural History in 1889–1891. He was called to the chair of anthropology at the University of Chicag in 1893. His publications include "On the Hills"; "Some First Steps in Human Progress"; "Indians of Southern Mexico"; "Strange Peoples"; etc.

Starr, Louis, an American physician; born in Philadelphia; became prominent by his treatment of children's diseases; was Clinical Professor of the Diseases of Children at the University of Pennsylvania in 1884–1890. His publications include "Diseases of Digestive Organs in Infancy and Childhood"; "Hygiene of the Nursery"; "Diets for Infants and Children in Health and Disease"; et

Star Routes, a term used in connection with the United States postal service. Prior to 1845 it was the custom in letting the contracts for the transportation of inland mails, other than by railroad or steamboat routes, to give the preference to bidders who offered stage or coach service. This was abolished by act of Congress, March 3, 1845, which provided that the postmaster general should let all such contracts to the lowest bidder tendering sufficient guarantee for faithful performance, without any condition except to provide for due celerity, certainty and security of transportation. These bids for such service became classified as "celerity, certainty and security bids," and for brevity were designated on the route registers by three stars (***) and known as star routes. These routes vary in length from a fraction of a mile up to several hundred miles, the longest one in operation in 1899 being that from Juneau, Alaska, via Circle in the same territory, along the Yukon river to Tanana, a distance of 1,618 miles, connecting at the last named point with the next longest route which runs from Tanana to St. Michaels, a distance of 900 miles.

Early in 1881 rumors were in circulation of extensive frauds in this branch of the mail service. Proceedings were begun, but no conviction was secured either on these charges or on others which were made in 1883.

Stars and Bars, the flag of the Confederate States of America. It was merely an adaptation of the stars and stripes, having three "alternate stripes red and white," instead of 13 such stripes, and a circle of white stars on a blue field, corresponding to the number of States of the confederacy.

Stars and Stripes, the national banner of the United States.

Star Spangled Banner, the national banner of the United States. First applied to the American flag by Francis S. Key on the morning after the British attack on Fort McHenry, at Baltimore, in 1814.

Star Thistle, a British plant which grows in gravelly, sandy, and waste places in the middle and S. of England, especially near the sea, and is remarkable for its long spreading spiny bracts. The star thistle, native in Arkansas and Louisiana, has very showy, pale-purple heads.

State, one of the members of the North American federation or union. The erection of the constituent members of the Union into their present status and reciprocal relations may be said properly to have begun with the formal ratification of the first Constitution of the United States, the order of which, by States, is given below. Prior to this action on their part, the colonies had occupied simply the position of congeries of provinces banded together for mutual defense, and having no other organic union than a common legislative body composed of delegates sent from each colony, which delegates might be withheld and all connection with the general body dissolved by the independent action of any one of the commonwealths composing it. The first to enter the sisterhood of States by ratifying the Constitution was Delaware, which, on Dec. 7, 1787, unanimously voted its adoption; then followed Pennsylvania, Dec. 12, 1787, vote 46 to 23; New Jersey, Dec. 18, 1787, unanimously; Georgia, Jan. 2, 1788, unanimously; Connecticut, Jan. 9, 1788, vote 128 to 40; Massachusetts, Feb. 6, 1788, vote 187 to 168; Maryland, April 28, 1788, vote 63 to 12; South Carolina, May 23, 1788, vote 149 to 73; New Hampshire, June 21, 1788, vote 57 to 46; Virginia, June, 1788, vote 89 to 79; New York, July 26, 1788, vote 30 to 28; North Carolina, Nov. 21, 1789, vote 193 to 75; Rhode Island, May 29, 1790, vote 34 to 32. It will thus be seen that Delaware is really the oldest State in the Union, while Rhode Island is the youngest. After the ratification of the Constitution and the entrance into statehood by the 13 original parties to the contract, the other members of the Union were admitted by act of Congress, upon their own petition and authority on the following dates:

Alabama	Dec. 14, 1819
Arkansas	June 15, 1836
California	Sept. 9, 1850
Colorado	Aug. 1, 1876
Florida	March 3, 1845
Idaho	July 3, 1890

Illinois	Dec. 3, 1818
Indiana	Dec. 11, 1816
Iowa	Dec. 28, 1846
Kansas	Jan. 29, 1861
Kentucky	June 1, 1792
Louisiana	April 30, 1812
Maine	March 15, 1820
Michigan	Jan. 26, 1837
Minnesota	May 11, 1858
Mississippi	Dec. 10, 1817
Missouri	Aug. 10, 1821
Montana	Nov. 8, 1889
Nebraska	March 1, 1867
Nevada	Oct. 31, 1864
North Dakota	Nov. 2, 1889
Ohio	Jan. 19, 1803
Oregon	Feb. 14, 1859
South Dakota	Nov. 2, 1889
Tennessee	June 1, 1796
Texas	Dec. 29, 1845
Utah	Jan. 14, 1896
Vermont	March 4, 1791
Washington	Nov. 11, 1889
West Virginia	June 19, 1863
Wisconsin	May 29, 1848
Wyoming	July 10, 1889

After the conclusion of the Civil War, for a time the seceding States were deprived of statehood and were subjected to military territorial rule. Gradually, however, a reconstruction of the organic government of the States was accomplished, and they were readmitted into full fellowship in the galaxy of States. The government of each State is an autonomy, and each is the supreme judge of its own laws, except so far as affected by the laws of the Constitution of the United States, the superior power of which is granted expressly in the compact of the union. The chief executive is a governor elected by the people for terms of varying length. The legislative body is composed of two houses, an upper and lower, also elected by the people; while the judiciary is selected by varying methods, in some States being elected directly by the people, in others by the Legislature, and in still others appointed (in some instances) by the governor. Each State has in the National Congress two senators and a number of representatives in the lower house based on the population of the State. From 1893 to 1903, based on the United States census of 1890, the ratio is one representative to 173,901 of population. The following table shows the number of electoral votes and congressional representatives by States:

	Electoral votes.	Representatives.
Alabama	11	9
Arkansas	8	6
California	9	7
Colorado	4	2
Connecticut	6	4
Delaware	3	1
Florida	4	2
Georgia	13	11
Idaho	3	1
Illinois	24	22
Indiana	15	13
Iowa	13	11
Kansas	10	8
Kentucky	13	11
Louisiana	8	6
Maine	6	4
Maryland	8	6
Massachusetts	15	13
Michigan	14	12
Minnesota	9	7
Mississippi	9	7
Missouri	17	15
Montana	3	1
Nebraska	8	6
Nevada	3	1
New Hampshire	4	2
New Jersey	10	8
New York	36	34
North Carolina	11	9
North Dakota	3	1
Ohio	23	21
Oregon	4	2
Pennsylvania	32	30
Rhode Island	4	2
South Carolina	9	7
South Dakota	4	2
Tennessee	12	10
Texas	15	13
Utah	3	1
Vermont	4	2
Virginia	12	10
Washington	4	2
West Virginia	6	4
Wisconsin	12	10
Wyoming	3	1

State College of Kentucky, a coeducational, non-sectarian institution in Lexington, Ky.; founded in 1865.

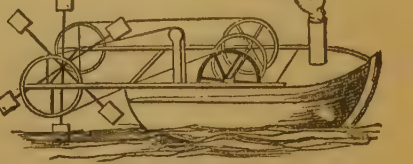
State, Department of, an executive department of the United States government, established by Act of Congress, July 27, 1789. At its head is the Secretary of State, who is appointed by the President and confirmed in the Senate. Through him communication is made between the United States government and any of the States or any foreign country. He has charge of the great seal of the United States; of all ambassadors and consuls, and in his custody are all engrossed copies of the laws of the United States and all treaties.

State University of Iowa, a co-educational non-sectarian institution in Iowa City, Ia.; founded in 1847.

Stations, a name applied in the Roman Catholic Church to certain places reputed of special sanctity, which are appointed to be visited as places of prayer. The name is particularly applied in this sense to certain churches in the city of Rome, which from an early period have been appointed as churches which the faithful are particularly invited to visit on stated days. The names of these churches are found on the several days in the Roman missal prefixed to the liturgy peculiar to the day. The word, however, is employed in a still more remarkable manner in reference to a very popular and widely-received devotional practice of the Roman Catholic Church, known as that of "The Stations of the Cross." This devotion prevails in all Catholic countries; and the traveler often recognizes it even at a distance by the emblems which are employed in directing its observance — the lofty "Calvary" crowning some distant eminence, with a series of fresco pictures or bas reliefs arranged at intervals along the line of approach. But the same series of images or pictures is ranged round most Roman Catholic churches, usually starting from one side of the high altar and ending at the other. These representations, the subjects of which are supplied by scenes from the several stages of the Passion of our Lord, are called Stations of the Cross, and the whole series is popularly known as the Via Calvarii, or Way of Calvary.

Statistics, a collection of facts, arranged and classified, respecting the condition of a people in a state or community, or of a class of people, their health, longevity, domestic economy, their social, moral, intellectual, physical and economical condition, resources, etc., especially those facts which can be stated in numbers, or tables of numbers, or in any tabular and classified arrangement. Also, that department of political science which classifies, arranges, and discusses statistical facts.

Stature, the natural height of an animal; bodily height or tallness. (Generally used of human bodies.) The Anthropometric Committee of the British Association, in 1883, reported that of the natives of the British Isles the Scotch stand first in height, averaging 68.71 inches; the Irish stand second, being 67.90 inches; the English come next, 67.36 inches; and the Welsh last, being 66.66 inches; the Polynesian tribes, 69.33 inches; the Patagonians, whose stature has been much exaggerated, 69 inches; the American whites in the United States, 67.67; the Zulus, 67.19, the American negroes, 66.62; the English Jews, 66.57; the French upper classes, 66.14; the Germans, 66.10; the Arabs, 66.08; the Russians, 66.04; the French working classes, 65.24; the Hindus, 64.76; the Chinese, 64.17; the Bushmen of South Africa, the lowest of stature of any known people, 52.78 inches.



A STEAMBOAT OF 1736.

Stay, nautically, a strong rope which stiffens and supports a mast in its erect position, by connecting its head to some part of the hull, or to a part stayed from the hull. The fore-and-aft stays lead forward in the vessel's line amidships; the back stays pass somewhat abaft the shrouds, and are attached to the side of the vessel, at the channels; the breast and standing stays lead from the mastheads down to the gunwale on each side. Spring stays are preventer stays to assist the principal ones. The fore-and-aft stays support the stay-sails by means of hanks. The stays are named from the masts they support; as, the forestay, foretopmast stay, maintopmast stay, jib and flying-jib stay, bob stay, etc. A jumper stay is a movable stay leading from the head of a mainmast to a pair of eye bolts in the deck close to the after part of the fore rigging. The triatic stay is connected at its ends to the heads of the fore

and main masts, and has a thimble spliced to its bight for the suspension of the stay tackle.

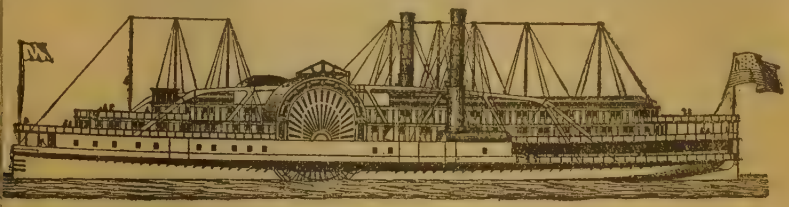
Stead, William Thomas, an English journalist; born in Embleton, Northumberland, July 5, 1849. He is widely known as editor of the "Review of Reviews," which he founded in January, 1890. In 1893 he established "Borderland," a periodical devoted to Spiritualism. "If Christ Came to Chicago" is another of his publications.

Steadman, Fort, a defensive work on the James river, about 18 miles below Richmond, Va. It was captured by the Confederates, March 14, 1865, and retaken by the Union troops shortly afterward.

STEAMBOAT OF 1812.

Steam, in physics, water in its gaseous form. It is a colorless, invisible gas, quite distinct from the visible cloud which issues from a kettle, etc., which is composed of minute drops of water produced by the condensation of the steam as it issues into the colder air. Under ordinary atmospheric pressure, water boils in an open vessel at a temperature of 212°, and the steam always has this temperature, no matter how fast the water is made to boil. The heat which is supplied simply suffices to do the work of converting the liquid water at 212° into gaseous steam at 212°, without raising the temperature of the steam at all. If the temperature of steam at 212° is lowered by only a very small amount, part of the steam is condensed; hence steam at this temperature is termed moist or saturated steam. At high temperatures and pressures, steam behaves like a perfect gas; but at lower pressures and at temperatures near the boiling point of water, its behavior differs markedly from that of perfect gases; and this change of properties has to be taken into account in all calculations connected with the expansion of steam in steam engines. If instead of allowing the steam to escape freely, the water is boiled in a closed vessel, the steam accumulates, and both pressure and temperature rapidly increase, till the former becomes several times greater than that of the atmosphere. If now the steam is allowed to escape, it rapidly expands, and if it escapes into the cylinder of a steam engine the expansion can be utilized and converted into work. As the steam expands, its pressure of course becomes less and less till it is not greater than that of the atmosphere; and at the same time its temperature is reduced, the reduction depending on the rapidity with which expansion takes place. The economic

ses of steam are extremely numerous. The most important is that of an gent for the production of mechanical orce on railways, in steamboats, and n manufactories. It is also largely mployed in warming buildings, in eating baths, in brewing, in distilling, nd for cooking purposes.



AMERICAN RIVER STEAMBOAT.

Steamboat, a boat or vessel propelled by steam acting either on paddles or on a screw. The term especially belongs to steam river craft; ocean-going craft being called steamers, steamships, etc. The first steamboat was built by Denis Papin, who navigated it safely down the Fulda s long ago as 1707. Unfortunately his pioneer craft was destroyed by ealous sailors, and even the very memry of it was lost for three-quarters of century.

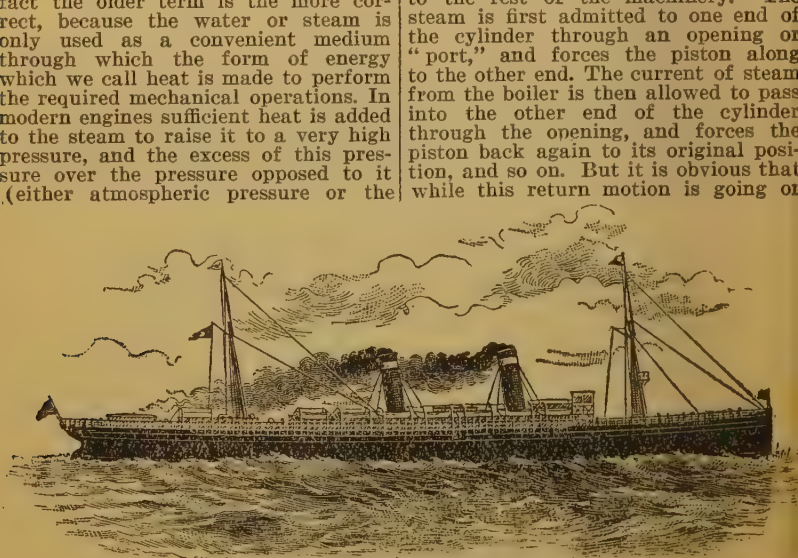
The first American to attempt to pply steam to navigation was John itch, a Connecticut mechanic, who nade his initial experiments in the year 1785. In the first he employed a large pipe kettle for generating the steam, the motive power being side paddles working after the fashion of oars on a common rowboat. In the second Fitch craft the same mode of propulsion was adopted with the exception that the paddles were made to imitate a revolving wheel and were fixed to the stern.

This last mentioned boat was the first American steam vessel that can be pronounced a success. It made its first trip to Burlington in July, 1788. But, after all, it was not till after the opening of the 19th century that steam navigation started into actual life. In 1801 Symington designed a boat for towing, which attained a speed of 3½ miles an hour. In 1807 Robert Fulton, an American, in conjunction with one Robert R. Livingston, built the "Clermont" and established a regular packet service between New York and Albany.

MODERN SOUND PROPELLER.

The success of this undertaking was so satisfactory that four new boats were built before the end of 1811, at least two of them being designed for service in other rivers.

Steam Engine. Steam engines in their infancy were known as "fire" (i. e., heat) engines; and in point of fact the older term is the more correct, because the water or steam is only used as a convenient medium through which the form of energy which we call heat is made to perform the required mechanical operations. In modern engines sufficient heat is added to the steam to raise it to a very high pressure, and the excess of this pressure over the pressure opposed to it (either atmospheric pressure or the



MODERN OCEAN STEAMSHIP.

still lower pressure in a condenser) is both the cause and measure of the work done by the engine. In earlier machines, however, the steam was raised only to atmospheric pressure, and admitted into the engine only to be at once condensed by a jet of cold water. The excess of the atmospheric pressure above the pressure in the partial vacuum caused by the condensation was then the direct cause of work. Engines of this kind were called atmospheric engines. The invention of steam as a moving power is claimed by various nations; but the first extensive employment of it, and most of the improvements made on the steam engine, the world indisputably owes to the United States and Great Britain.

The common mode of employing steam in an engine is by causing it to press alternately on the two surfaces of a movable diaphragm or piston enclosed in a fixed steam-tight, cylindrical box. The piston, by means of a rod, passing through the end of the box, is made to communicate motion to the rest of the machinery. The steam is first admitted to one end of the cylinder through an opening or "port," and forces the piston along to the other end. The current of steam from the boiler is then allowed to pass into the other end of the cylinder through the opening, and forces the piston back again to its original position, and so on. But it is obvious that while this return motion is going on the steam previously admitted must be allowed some exit, or the piston could not be forced back. The manner of this exit constitutes the difference between the two principal classes of engines, according as the steam is allowed simply to rush out into the atmosphere or is conducted into a separate vessel and there "condensed."

Steam Gauge, an instrument attached to a boiler to indicate the pressure of steam.

Steam Hammer, a hammer worked by means of steam. In 1839 James Nasmyth invented the steam hammer called after him, and patented it in 1842. In Nasmyth's hammer the head is attached to the piston rod of an inverted cylinder supported ver-

tically, and the piston is raised by the action of the steam admitted into the cylinder below the piston. The hammer is allowed to fall by its own weight, or is driven downward with still greater velocity by the action of steam admitted into the cylinder above the piston. The admission of steam into the cylinder is regulated by a side valve worked by a lever, and the force of the stroke can be controlled to such an extent by regulating the admission of steam, that the largest hammer can be made to crack a nut, or to come down on a mass of iron with a momentum of many hundred foot tons. The cylinder, which is supported on a strong iron framework, is very strong, and the steam pipes are of extra strength, because of the high pressure at which the steam is employed. The piston rod is of stout wrought iron or steel, and the hammer itself is also of steel. The weight of the hammer ranges from about 200 pounds to 25 tons; and the object to be struck is placed on an anvil consisting of a slab of iron resting on a huge mass of piles and concrete, which frequently descends a great depth into the ground.

Steam Navigation. In 1815 a steamboat made a passage from Glasgow to London, and in 1818 one plied from New York to New Orleans. In 1819 the "Savannah," an American vessel of 380 tons burden, with side wheels, built at Corlear's Hook, N. Y., by Crocker and Fickitt, made the first trip by steam across the Atlantic, sailing from the United States to England and thence to St. Petersburg. At Liverpool she made a great sensation, being mistaken at one time for a vessel on fire. Canvas was used during the last part of the voyage, because after about 12 days out the engine had consumed all the coal which could be carried. There was no room for cargo when she was stored with coal. Steam vessels are now to be found on all seas and lakes and navigable streams. War steamers have taken the place of the old ships of the line. Except for the transport of heavy goods to long distances steam bids fair to supersede the use of sails. The maximum speed yet attained by steam vessels is 45 miles an hour; the ordinary rate 8 to 15 miles.

Steam Whistle, a sounding device connected with the boiler of a steam engine, either stationary, locomotive, or marine, for the purpose of announcing the hours of work, signaling, etc. In the ordinary locomotive steam whistle the foot is bolted onto the fire box, has an opening for the admission of steam, and is provided with a cock, by turning which steam is permitted to rush into the hollow piece, which is provided with holes around its lower and narrower portion, through which the steam rushes into the cavity of the cup, and passing out through the narrow annular opening, impinges against the rim of the bell, causing a shrill, piercing sound. Holes in the top of the bell permit the escape of the steam upwardly and increase the volume of sound. The quality of the tone depends on the width of the annular opening, the depth of the bell, and the distance between it and the cup. The calliope is a series of such whistles tuned to a scale and operated by keys.

Stearns, Frank Preston, an American art critic; born in Medford, Mass., Jan. 4, 1846. He wrote: "The Real and Ideal in Literature"; "The Midsummer of Italian Art," etc.

Stearns, James Schermerhorn, an American lawyer; born in Waterbury, N. Y., about 1836; was admitted to the bar in 1857; became noted for his benevolence, and devoted much of his time and money to charitable work. He founded and supported missions in Newton and Dover, N. J., and contributed largely to the Market Street Mission in Morristown, N. J. He died in Morristown, N. J., Jan. 25, 1902.

Stedman, Edmund Clarence, an American poet and banker; born in Hartford, Conn., Oct. 8, 1833; was a student at Yale, but did not graduate. He was a war correspondent of the New York "World" during the American Civil War. In 1884 he became a stock broker in New York city. The best known of his critical works are: "Victorian Poets"; Edgar Allan Poe," and "Poets of America." He edited in collaboration with Ellen M. Hutchinson "A Library of American Literature" (1888–1890).

Steel. Recent improvements in the metallurgical treatment of iron have so broken down all dividing lines be-

tween malleable iron, cast iron, and steel that there is now much difficulty in defining and limiting any of these forms. Steel may in a general way be defined as a variety or condition of iron capable of being melted and cast, hammered and welded, and of being tempered, or hardened and softened. It is thus in its properties intermediate between malleable and cast iron, and in its composition it also occupies a middle place between these two varieties. The proportion of carbon contained in the metal is the chief element in determining its character, cast iron containing generally from 2.5 to about 5 per cent. of carbon, steel having from .05 to 1.80, and the proportion in malleable iron varying from .016 up to about .34; but there are other circumstances which also go to determine the nature and quality of any of the kinds.

The methods by which steel of various qualities are now produced are numerous, but they may all be included under these heads: (1) The partial decarbonization of cast iron; (2) the addition of carbon to malleable iron; and (3) the complete decarbonization of pig iron, and the addition of the necessary carbon by means of pig iron or other kinds rich in carbon to the molten mass.

Steel presents physical characteristics so distinct from those of malleable iron that it may be for practical purposes regarded as a distinct metal. Its most remarkable physical characteristic is its power of becoming exceedingly hard by sudden cooling from a high heat, and of passing through many grades of hardness downward from that point by the process of tempering. The tempering is accomplished by reheating the metal to a certain degree and allowing it gradually to cool, and according to the heat to which it is raised is the resulting temper, the higher the heat the softer being the steel. Sir Joseph Whitworth has introduced a method of compressing with enormous force cast steel in its fluid state, and he demonstrates that thereby the tensile strength and homogeneity of the metal are increased in a remarkable manner.

Steele, George M. K., an American clergyman; born in 1824. He was president of Lawrence University in Appleton, Wis., in 1865–1879; and principal of the Wesleyan Academy Wilbraham, Mass., in 1879–1892, when he retired from active work. He died in Kenilworth, Ill., Jan. 14, 1902.

Steendam, Jacob, the first poet of New York; born in Holland in 1616. He lived in New Netherlands in 1632–1662; and wrote a small volume of verse, which was reprinted with memoir of the author (The Hague, 1861). The poems are descriptive of life in the colony. The date and place of his death are not known.

Steeplechase, a horse race run not on a course of smooth, flat turf, but across the open country, over hedges, ditches, walls, and whatever other obstacles lie in the way. This variety of sport seems to have had its origin (traditionally) in the frolic of a merry party of fox hunters, who agreed to race in a straight line toward a steeple visible in the distance, an event which is recorded to have happened in Ireland in 1803; further particulars of it, however, are not known. The principal race in this class of sport in the United Kingdom is the Grand National, which was instituted at Liverpool the headquarters of steeplechasing in 1839; it is now run on different courses in different years. Among the more important steeplechase meetings are those of Liverpool, Newport, Pagnell, St. Albans, Aylesbury, Lincoln, Brocklesby, and Leamington. Steeplechase races have always been greatly in favor in Ireland.

Stein, Robert, an American linguist; born in Rengersdorf, Silesia, Prussia, in 1857; came to the United States in 1883 and engaged in teaching. He entered the United States Geological Survey in 1885 and became translator of German, French, Italian, Danish, Swedish, Norwegian, Russian, Dutch, Spanish, Portuguese, and other languages. In 1897 he joined the seventh Peary expedition, and in 1899 took passage on the "Diana" to explore Ellesmereland. He was the author of various articles on economic and social subjects, and Arctic exploration.

Steinbok, or **Steenbok,** in zoölogy, the Antilope iragulus, from the stony plains and mountains of South Africa; rather more than three feet long, and about 20 inches high at the

shoulder; red brown above, white below; tail rudimentary, ear large; horns straight, about four inches long in the male, absent in female; no false hoofs. Also, the ibex.

Stem, in botany, the ascending axis of a plant. It seeks the light, strives to expose itself to the air, and expands itself to the utmost extent of its nature to the solar rays. It is generally cylindrical; but may be triangular, square, two-edged, filiform, as in flax; or leaf-like. It consists of bundles of vascular and woody tissue embedded in various ways in cellular substance, the whole being inclosed with an epidermis. Stems may be aërial or underground. The most highly developed form of the former is the trunk of a tree, the next, a shrub.

In mechanics, the projecting-rod which guides a valve in its reciprocations. In mining, a day's work. In music, the line attached to the head of a note.

In shipbuilding, the upright piece of timber or bar of iron at the fore end of a vessel, to which the forward ends of the stakes are united. With wooden stems the lower end is scarfed into the keel. The upper end supports the bowsprit, and in the obtuse angle is the figure head. The advanced edge of the stem is the cut-water. It is usually marked with a scale of feet, showing the perpendicular height above the keel, so as to mark the draught of water at the forepart.

Stencil, a thin plate of metal, cardboard, leather or other material (brass generally), out of which patterns, numbers, or letters have been cut. The plate is laid on the surface to be painted or marked, and a brush dipped in ink or color is then rubbed over it, the surface receiving the color only through the parts cut out of the plate.

Stephen, King of England; son of the Count of Blois by his wife Adela, daughter of William the Conqueror; born in Blois, France, in 1105. Being in England on the death of Henry I., he seized on the crown and royal coffers, to the prejudice of Henry's daughter, Matilda, the empress, and was crowned in 1135. Four years elapsed before Matilda was able to land with forces to dispute Stephen's possession of the throne, and after a long civil war that lasted nearly the whole reign and in which Stephen was once taken prisoner but released for Matilda's brother, the Earl of Gloucester, it was finally decided that Stephen should retain the crown for his own life, on condition that Prince Henry, Matilda's son by her first husband, should succeed. These terms were concluded in 1154. He died in Dover, England, Oct. 25, 1154.

Stephens, Alexander Hamilton, an American statesman; born near Crawfordsville, Ga., Feb. 11, 1812; was graduated at Franklin College in 1828 and admitted to the bar in 1834. He was elected to Congress in 1843; and in 1847 submitted a series of resolutions in relation to the Mexican War, which afterward formed the platform of the Whig party. Shortly after the outbreak of the Civil War he was elected vice-president of the Confederate States of America, and on March 21, 1861, delivered a speech in Savannah, in which he declared slavery to be the cornerstone of the new government. In February, 1865, he was at the head of the Peace Commission of the Confederate government in the Hampton Roads conference. After the war he turned his attention to literary pursuits and published "The War Between the States" and edited the Atlanta "Sun." He was again elected to Congress in 1874, and reëlected in 1876 serving till 1882, when he resigned to become governor of Georgia. He died in Atlanta, Ga., March 4, 1883.

Stephens, Alice Barber, an American illustrator; born in New Jersey, in 1858; first became prominent as a wood-engraver for "Scribner's Magazine." Later she illustrated extensively for "Harper's Magazine," "The Century," and other publications including the "Ladies' Home Journal." She also taught in the Philadelphia School of Design for Women.

Stephens, Ann Sophia (Winterbotham), an American novelist; born in Derby, Conn., 1813. After 1837 she resided in New York, and was at different times engaged in editorial work. The most noted of her poems is "The Polish Boy"; and of her novels, "Fashion and Famine." She died in Newport, R. I., Aug. 20, 1886.

Stephens, Charles Asbury, an American author; born in Norway Lake, Me., in 1847. He published: "Camping Out"; "Off to the Geysers," also works on biology, "Living Matter"; "Pluricellular Man"; and "Long Life."

Stephens, John Lloyd, an American author; born in Shrewsbury, N. J., Nov. 28, 1805; was graduated in 1822 at Columbia College; studied law and practised in New York. In 1839 he was sent by the United States government to negotiate a treaty with the government of Central America; and as the result of his experiences and investigations in that country he published "Incidents of Travel in Central America, Chiapas, and Yucatan" (1841); and after further exploration, "Incidents of Travel in Yucatan" (1843), describing the ruined cities and monuments of this part of America. He was one of the organizers of the first Atlantic steam navigation company and one of the first presidents of the company which constructed a railway across the Isthmus of Panama, and superintended the construction. He died in New York city, Oct. 10, 1852.

Stephens, Uriah Smith, an American labor reformer; born near Cape May, N. J., Aug. 3, 1821. Dec. 9, 1869, with six others he founded the Knights of Labor. Jan. 1, 1878 was chosen first Grand Master Workman of the General Assembly. He died in Europe Feb. 13, 1882.

Stephenson, George, an English engineer; born in Wylam, England, June 9, 1781. In 1812 he was appointed engineer to the colliery, at a salary of $500 a year. Soon after this he built his first traveling engine to draw the wagons along the tramway, which, though clumsy and weak in power, was immensely superior to any engine then in use. Improvement followed on improvement in rapid succession, not only in the form of the locomotive, but in the rails and in every department to which steam was applicable. In 1822 he opened the first railway, eight miles long. The whole system of railway locomotion with all its complications of stations, signals, tenders, and carriages, was completed by the opening of the Liverpool and Manchester Railway in 1830. In 1845 he retired from all railway undertakings, after having been instrumental in establishing all the foreign and home lines. He died near Chesterfield, England, Aug. 12, 1848.

Stephenson, Robert, a British civil engineer, only son of George Stephenson; born near Newcastle-upon-Tyne, Oct. 16, 1803; joined his father in his operations on the Liverpool line; became the permanent engineer of that company; surveyed several new lines, visited South America to inspect the gold and silver mines of that country; and established a name as the first civil engineer in Europe. In 1847 he entered Parliament for Whitby; he was a Fellow of the Royal Society, and a member of nearly all the scientific societies of Europe. He published two valuable works, "The Locomotive Steam Engine," and "The Atmospheric Railway System." He died in London Oct. 12, 1859, and was buried in Westminster Abbey where there is a memorial window in his honor.

Steppe, a term applied to one of those extensive plains which, with the occasional interpolation of low ranges or hills, stretch from the Dniepe across the S. E. of European Russia round the shores of the Caspian and Aral seas, between the Altai and Ural chains, and occupy the low lands of Siberia. In spring they are covered with verdure, but for the greater part of the year they are dry and barren. There are three different kinds of steppe, viz., grass, salt, and sand steppes, each maintaining peculiar forms of vegetation.

Stereopticon, a magic lantern having two objective tubes that can be focused on the same part of a screen and by the alternate projection of pictures from the separate tubes produce the well-known phenomenon of "dissolving views." The stereopticon has been successfully adapted to the projection of instantaneous photographs of moving objects, producing the same effect of motion on the screen as observed in the kinetoscope.

Stereoscope, a simple and popular optical contrivance, by which two flat slightly dissimilar pictures of an object are fused into one image, having the actual appearance of relief. The stereoscope is constructed in ac-

cordance with the visual phenomena which convey to the mind impressions of the relative forms and positions of an object. When a near object having three dimensions is looked at, a different perspective representation of it is seen by each eye; in other words, there is distinct binocular parallax. Certain parts are seen by the right eye, the left being closed, that are invisible to the left eye, the right being closed, and vice versa, and the relative positions of the portions visible to each eye in succession differ. These two visual impressions are simultaneously perceived by both eyes, and are combined into one image, producing the impression of perspective and relief. If, then, truthful right-and-left monocular pictures of any object be so presented to the two eyes that the optic axes, when directed to them, shall converge at the same angle as when directed to the object itself, a solid image will be seen. This is effected with the stereoscope, a reflecting form of which was invented by Professor Wheatstone in 1838.

Stereotype, fixed type; hence a plate cast from a plaster or papier-mache mold, on which is a facsimile of the page of type as set up by the compositor, and which, when fitted to a block, may be used under the press, exactly as movable type. A paper matrix is formed by spreading paste over a sheet of moderately thick unsized paper, and covering it with successive sheets of tissue paper, each carefully patted down smooth, and the pack then saturated. The face of the type is oiled, the face of the paper laid on the type, and then the matrix dabbed by a beating brush from the back, so as to drive the soft paper into all the interstices between the letters of the form. A reinforce sheet of damp matrix paper is laid on the back of the matrix, and the matrix beaten again, to perfect the impression and establish a junction. The hollows in the back are filled up, and the matrix, after being covered with a double thickness of blanket, is placed in a press and subjected to strong pressure over a steam chest, the heat of which dries the matrix. The press is unscrewed, the matrix removed, its edges pared, and it is warmed on the molding press. The matrix is then placed in the previously-heated iron casting mold; a casting gauge to determine the thickness of the stereotype is placed round three sides of the matrix, the other side being left open for a gate, at which the molten metal is poured in. The cover is screwed tight, the mold tipped to bring the mouth up, and the metal poured in. When the metal is set, the mold is opened and the matrix removed. The plate is then trimmed and otherwise prepared in the usual manner. For rotary printing machines both matrix and plate form the segment of a circle to enable the plate to fit on the impression cylinder.

Sterilized Milk, milk which has been subjected to a process that destroys the bacteria causing lactic or butyric acid fermentation and the germs of disease.

Sterling Gold, gold having the value or fineness of the standard established by the British government. It consists of 22 parts (called carats) of pure gold and two parts of alloy, either silver or copper.

Sterling Silver, silver having the value or fineness of the standard established by the British government. It consists of 37 parts of silver and 3 of copper.

Sternberg, George Miller, an American surgeon; born in Otsego co., N. Y., June 8, 1838; was graduated at the College of Physicians and Surgeons in New York city in 1860. He was appointed an assistant surgeon in the army in 1861; promoted captain and assistant surgeon May 28, 1866; major, Dec. 1, 1875; lieutenant-colonel Jan. 2, 1891; and Brigadier-General and Surgeon-General May 30, 1893. During the Civil War he served in the Army of the Potomac and in the Department of the Gulf. Afterward he served through several cholera and yellow fever epidemics, and in 1898 at the outbreak of the Spanish-American War he planned the army hospital train, and had charge of the medical service of the army. He was secretary of the Havana Yellow Fever Commission in 1879; president of the American Medical Association in 1898; and the author of "Photo-Micrographs, and How to Make Them"; etc.

Sterner, Albert Edward, an American artist; born in London, England, March 8, 1863; was educated at Julien's Academy and the Ecole des Beaux Arts in Paris; and came to the United States in 1881. He was employed as a scene painter and lithographer in Chicago, Ill., in 1881–1885, when he went to New York city and there opened a studio. He was the illustrator of George W. Curtis' "Prue and I"; "Coppee's Tales"; "Poe's Works"; and other books and magazines.

Stethometer, an instrument for measuring the external movements in the walls of the chest during respiration, as a means of diagnosis in thoracic diseases. In one form a cord is extended round the chest, and its extension as the thorax is expanded works an index finger on a dial plate. It thus becomes a measure of the expansive power and capacity of the lungs.

Stethoscope, an instrument employed in auscultation. The chief use of the stethoscope is to enable the medical man to sound small portions of lung at a time, and so detect more correctly than by the unaided ear the exact seat of disease.

Steuben, Frederic William Augustus, Baron, an American military officer; born in Magdeburg, Prussia, Nov. 15, 1730. He came to America in 1777 and his offer of service was readily accepted. Having received the appointment of inspector-general, with the rank of Major-General, he proved of efficient service to the American army in establishing a system of discipline and tactics, a perfect knowledge of which he had acquired as an officer under Frederick the Great. He spent his whole fortune in clothing his men and gave his last dollar to the soldiers. Congress made tardy reparation, and in 1790 voted him an annuity of $2,500 and a township of land in the State of New York, both of which he divided with his fellow officers. He died on his estate near Utica, N. Y., Nov. 28, 1794. In 1870 the corner stone of a monument to his memory was laid at the Schutzen Park.

Stevens, Abel, an American clergyman; born in Philadelphia, Jan. 19, 1815. He was editor of the "Methodist" in 1865-1874; subsequently traveled extensively, and settled in Geneva, Switzerland. He wrote many denominational books, besides several volumes of memoirs. He died in San Jose, Cal., Sept. 12, 1897.

Stevens, Benjamin Franklin, an American bibliographer; born in Barnet, Vt., Feb. 19, 1833; was engaged for more than 30 years in making a manuscript chronological and alphabetical catalogue index of American papers in many archives in England, Holland and Spain; made facsimiles of many such manuscripts; and devoted much time to the compilation of unpublished manuscript papers pertaining to the American Revolution. Died 1902.

Stevens, Henry, an American bibliographer; born in Barnet, Vt., Aug. 24, 1819; was graduated at Yale College in 1843; became interested in the Colonial history of the United States; went to England in search of American historical data in 1845, and there succeeded in gathering an immense amount of valuable material relating to the early history of the United States. His publications include: "Catalogue of a Library of Works Relating to America," etc. Died in South Hampstead, England, Feb. 28, 1886.

Stevens, John Austin, an American historian; born in New York city, Jan. 21, 1827. He was secretary of the Chamber of Commerce, librarian of the New York Historical Society, and has made a special study of American history. He founded and for many years conducted the "Magazine of American History."

Stevens, Thaddeus, an American statesman; born in Danville, Vt., April 4, 1792; was graduated at Dartmouth College in 1814; studied law and was admitted to the Maryland bar. He kept aloof from politics till the election of Jackson in 1828, when he became an active member of the Whig party. In 1848 and again in 1850 he was elected to Congress, where he maintained strong opposition to the Fugitive-Slave Law, the Kansas-Nebraska bill, and all measures favoring the independence of the South. In 1858 he was again elected

to Congress and retained his seat till his death, in Washington, D. C., Aug. 11, 1868.

Stevens Institute of Technology, an educational non-sectarian institution in Hoboken, N. J.; founded in 1870.

Stevenson, Adlai Ewing, an American statesman; born in Christian co., Ky., Oct. 23, 1835; early took an active part in politics as a Democrat, and in 1875–1877 and 1879–1881 represented Illinois in the National House of Representatives. In 1885 was appointed first assistant postmaster-general, and after the renomination of Grover Cleveland in 1892 was chosen the candidate for the vice-presidency. The Democratic candidates were elected, and after the expiration of his term he was appointed a member of the American commission to visit Europe and endeavor to secure the adoption of international bimetallism.

Stevenson, Edward Irenæus, an American journalist; born in Madison, N. J., in 1858. He was editorially connected with the New York "Independent" after 1881, and also with "Harper's Weekly" and several musical journals.

Stevenson, Robert Louis Balfour, a British author; son of Robert Stevenson; born in Edinburgh, Scotland, Nov. 13, 1850; educated at the University of Edinburgh, was intended for his father's profession, but studied law; in 1873 went abroad for his health; wrote for periodicals till 1878, when his first book appeared; visited California in 1879; spent the winter of 1887–1888 in the Adirondacks; cruised in the Pacific; bought a tract of land ("Vailima" or "Five Streams") in Samoa, where he made his home. He published a large number of works. He died in Vailima, near Apia, Samoa, Dec. 3, 1894.

Steward, in the original sense, one who looked after the domestic animals and gave them their food; hence, one who provides for his master's table, and, generally, one who superintends household affairs for another. A person employed on a large estate or establishment, or in a family of consequence and wealth, to manage the domestic affairs, superintend the other servants, collect rents, keep the accounts, etc. An officer in a college who provides food for the students and superintends the affairs of the kitchen. An official on a vessel, whose duty it is to distribute provisions to the officers and men.

Stewart, Alexander Peter, an American military officer; born in Rogersville, Tenn., Oct. 2, 1821; was graduated at the United States Military Academy in 1842. During the Civil War he served under Generals Bragg, Johnston, Hood, and others in the Confederate army. He is the Southern member of the Chickamauga National Park Commission.

Stewart, Alexander Turney, an American merchant; born near Belfast, Ireland, Oct. 12, 1803; came to the United States in 1823 and engaged in teaching. In 1825 he began, in New York city, a dry-goods business which gradually expanded into one of the largest mercantile concerns in the world. He died in New York, April 10, 1876. His body was stolen from the grave in New York city, and ransom demanded. It is understood that his widow paid $25,000 for the return of the remains which were then entombed in the Cathedral at Garden City, Long Island.

Stewart, Charles, an American naval officer; born in Philadelphia, Pa., July 28, 1778; entered the navy in 1789 as lieutenant of the frigate "United States." As commander of the brig "Siren" he participated in the naval operations of 1804 against Tripoli and aided in the destruction of the "Philadelphia." In 1813 he took command of the "Constitution," and in December sailed from Boston on a cruise to the coast of Guiana and the Windward Islands, which resulted in the capture of the British schooner "Picton" and several merchant vessels. He commanded a squadron in the Mediterranean in 1816–1820, and in the Pacific in 1821–1823; served on the board of navy commissioners; commanded the home squadron; and had charge of the naval station at Philadelphia. In 1857 he was placed on the retired list, but resumed service in 1859 as commander of the Philadelphia navy yard, and on July 16, 1862, was made rear-admiral

on the retired list. He died in Bordentown, N. J., Nov. 7, 1869.

Steyn, Martinus Theunis, a Boer statesman; born in Winburg, Orange Free State, Oct. 2, 1857; worked on his father's farm till 1876, when he went to England to study. He returned to Africa in 1882 and practiced law in Bloemfontein till 1889, when he was made second puisne judge and state attorney. Later he became first puisne judge, and in 1896 was chosen president of the Orange Free State. For a number of years before his election to the presidency he had been in communication with President Kruger and their close relations finally resulted in the union of the interests of the Orange Free State and the Transvaal in their struggle against Great Britain. When the Boer War broke out he took the field in person with the Free State troops. After the surrender he went to Europe seriously ill, but has partly recovered.

Stigma (plural, **Stigmas,** or **Stigmata),** a mark made with a redhot iron; a brand impressed on slaves and others; also a small red speck on the human skin, causing no elevation of the cuticle; a natural mark or spot on the skin; figuratively, any mark of infamy, disgrace, or reproach which attaches to a person on account of bad conduct; a slur. In anatomy, the projecting part of a Graafian follicle at which rupture occurs. In biology, stigmata are the external openings of the tracheal apparatus in the Insecta and Arachnida. In botany, the part of the pistil to which the pollen is applied. It is generally situated at the upper extremity of the style.

Stigmatization, the appearance or impression of counterparts of all or some of the wounds received by Jesus in His Passion, in their appropriate positions on the human body. The first case on record, and the most important, is that of St. Francis of Assisi, the founder of the Franciscans. It is said that while the saint was engaged in a fast of 40 days on Mount Alvernus, in the year 1224, a crucified seraph with six wings appeared and discoursed to him of heavenly things. Francis fainted, and on recovering consciousness found himself marked with the wounds of crucifixion in his hands, his feet, and right side. Thomas a Celana and St. Buonaventura attested the case, and Pope Alexander IV. (1254–1261) claimed to have seen the stigmata during the lifetime of St. Francis and after his death.

Stiletto, The, a single screw, wooden, torpedo boat, the smallest vessel of its class in the United States navy.

Stilicho, Flavius, a Vandal of great genius and bravery, who distinguished himself at the declining period of the Roman empire, was advanced to the highest dignities of the state by Theodosius the Great, and married Serena, the emperor's adopted daughter, besides being intrusted in 394 with the guardianship of his two sons, Arcadius and Honorius. On the division of the empire, Stilicho became virtual governor of the West, in the character of first minister to Honorius, while the same power in the East was exercised by Rufinus, under Arcadius, the other emperor. The military genius of Stilicho, after this period, was exhibited in the reduction of Africa which had been led into a revolt by Eutropius the successor of Rufinus at the Eastern court, and subsequently in the great contests with Alaric and Radagasius. While Stilicho lived he sustained the fortunes of the Roman name, but he was accused of having a secret understanding with Alaric, and was treacherously put to death in 408. The wives and children of 30,000 Germans who were in his service were massacred at the same time.

Still, an apparatus for distillation. It consists essentially of a vessel in which the liquid to be distilled is placed, the vapor being conducted by means of a head or neck to the condenser or worm where it is cooled by water or other means, and again forms liquid. The still itself varies greatly according to the purpose for which it is used. It is made of copper, iron, earthenware, or glass, and is heated by naked flame or steam heat.

Still, William, an American philanthropist and anti-slavery advocate, of African descent; born in Shamony, N. J., Oct. 7, 1821; was chairman and secretary of the Philadelphia branch of the famous "underground railroad" of 1851–1861, and wrote out the narratives of escaping slaves,

which constitute the only full account of this organization. He died 1902.

Stille, Charles Janeway, an American historian; born in Philadelphia, Pa., Sept. 23, 1819; was graduated at Yale College in 1839, and admitted to the bar, but devoted himself to literary pursuits. During the Civil War he was an active member of the United States Sanitary Commission, of which he afterward became the historian. In May, 1866, he was made Professor of History and English Literature in the University of Pennsylvania, and in 1868 was chosen its provost. He died in 1899.

Stillman, Thomas Bliss, an American chemical engineer; born in Plainfield, N. J., May 24, 1852; studied chemical engineering in Wiesbaden, Germany. Returning to the United States he was made professor of analytical chemistry at Stevens Institute of Technology in 1886. He became a member of the principal engineering societies, and was editor of the Stevens Institute "Indicator" in 1895–1898.

Stillman, William James, an American artist, journalist, author, and traveler; born in Schenectady, N. Y., June 1, 1828; was graduated at Union College in 1848; founded and edited the "Crayon," an art journal in New York. He was for many years a correspondent of the London "Times" and the New York "Evening Post." He was consul-general to Crete, 1865–1869. He died in Frimley Green, Surrey, near London, England, July 8, 1901.

Stilson, Daniel Chapman, an American inventor; born in Durham, N. H., March 25, 1830; was a machinist in the Charleston navy yard, and in 1862 was appointed assistant engineer in the navy. After the Civil War he resumed his trade as a machinist and later invented a wrench that made his name known throughout the mechanical world, and devised other apparatus including a safety fire sprinkler. He died in Somerville, Mass., Aug. 21, 1899.

Stimson, Frederic Jesup, an American lawyer; born in Dedham, Mass., July 20, 1855; was graduated at Harvard University in 1876, and at Harvard Law School in 1878; was chosen general counsel to the United States Industrial Commission. He was the author of several law books, novels, essays, etc.

Stimulants, in pharmacy, agents which increase vital action, first in the organ to which they are applied, and next in the system generally. Stimulants are of three kinds, stomachic, vascular, and spinal. The name is popularly restricted to the first of these, which act on the stomach, expelling flatulence, besides allaying pain and spasm of the intestines. They are also called carminatives. Examples, ginger, capsicum and chillies, cardamoms, mustard, pepper, etc.

Sting, in botany, a stinging hair. Stinging hairs are sharp, stiff hairs, containing an acrid fluid which is injected into the wound which they produce; stimuli. Example, the nettle, in which the apex is expanded into a little bulb which is broken off when the sting is slightly touched. In entomology, a weapon of defense, concealed within the abdomen of bees, wasps, etc., and capable of exsertion, or forming part of the last joint of the tail in scorpions. The sting of the bee appears to the naked eye a simple needle-shaped organ; but the microscope shows that it is formed of three pieces: A short, stout, cylindrico-conical sheath containing two setæ, or lancets, one edge thickened and furnished with teeth directed backward, the other sharp and cutting. The poison apparatus consists of two glandular elongated sacs, and terminates by one or two excretory ducts. Morphologically viewed, a sting is an altered oviduct. The term sting is sometimes inaccurately used for the bite of a venomous serpent, and of the forked tongue of snakes.

Stingray, a fish allied to the rays proper. It is remarkable for its long, flexible, whip-like tail, which is armed with a projecting bony spine, very sharp at the point, and furnished along both edges with sharp cutting teeth. One species is common on the E. coasts of North America. These fishes sometimes inflict serious wounds with their tails.

Stinkwood, a tree of the natural order Lauraceæ, a native of the Cape of Good Hope, remarkable for the strong disagreeable smell of its wood, which, however, is hard, very durable,

takes an excellent polish, and resembles walnut. It has been used in shipbuilding.

Stipa, feather grass. Steudel describes 104 species. They are widely distributed, but are most abundant in warm countries. The common feather grass has rigid, setaceous, grooved leaves, and exceedingly long awns, feathery at the point. It is very ornamental in gardens in summer, and if gathered before the seeds are ripe it retains its long feathery awns, and is sometimes dyed various colors and used for decorative purposes.

A STINGRAY.

Stirrup, a leather strap or similar device, suspended from a saddle and having at its lower end a loop, ring, or other suitable appliance for receiving the foot of the rider, and used to assist him in mounting a horse, as well as to enable him to sit steadily in the saddle while riding, and also to relieve him by supporting a part of the weight of the body.

Stitchwort, a genus of which there are about 70 species — all slender herbs, widely distributed through the temperate and cold regions of the globe. The best known members are the great stitchwort which from its large white flowers in early summer is an ornament of hedgerows and pastures; wood stitchwort and the chickweed, native through Arctic and N. temperate regions, and now a cosmopolitan naturalized weed. The great stitchwort was supposed to cure "stitch" in the side, hence the name.

Stock, a name originally applied to a cruciferous garden plant (called more fully stock gillyflower), but now extended to certain allied plants of the same order. They are herbaceous or shrubby, biennial or sometimes perennial, and have single or double fragrant flowers. The Virginia stock has been introduced from the Mediterranean, and like the species already mentioned is a great favorite in the flower garden on account of its beauty and fragrance.

Stockade, an inclosure or pen made with posts and stakes. In civil engineering, a row of piles, or a series of rows with brushwood in the intervals, driven into a sea or river shore, to prevent the erosion of the banks. In fortification, stout timbers planted in the ground so as to touch each other, and loopholed for musketry. In its most effective form it is eight or nine feet high, has a ditch in front and a banquette in the rear.

Stock Dove, the common wild pigeon, 14 inches in length, and with a general bluish gray plumage, the breast being purplish. It raises two or three broods in a season and builds its nest in a tree stump or in a rabbit burrow.

Stock Exchange, a market for the purchase and sale of public stocks, shares, and other securities of a similar nature. Such institutions are now found in all large cities of the United States. The New York Stock Exchange was founded in 1792.

Stockholm, the capital of the kingdom of Sweden; on several islands and the adjacent mainland, between a bay of the Baltic and Lake Malar; in a situation that is accounted one of the most picturesque in Europe. The nucleus of Stockholm is an island in mid-channel called "the Town"; on it stand the imposing royal palace (1697–1754); the principal church (St. Nicholas), in which the kings are crowned; the House of the Nobles (1648–1670), in which that class hold their periodical meetings; the town house; the ministries of the kingdom; and the principal wharf, a magnificent

granite quay, fronting E. Immediately W. of the central island lies the Knights' Island; it is almost entirely occupied with public buildings, as the Houses of Parliament; the old Franciscan Church, in which all the later sovereigns of Sweden have been buried; the royal archives; and the chief law courts of the kingdom. There is considerable industry in the making of sugar, tobacco, silks and ribbons, candles, linen, cotton, and leather, and there are large iron foundries and machine shops. The water approaches to the city are in general rendered inaccessible by ice during three or four months every winter; but to remedy this defect it is proposed to build a new harbor at Nynas on the Baltic shore, 30 miles to the S. In spite of the winter drawback Stockholm is the seat of a trade sufficient to bring an average of 1,760 vessels of 635,000 tons into the port every year, carrying principally grain (wheat and rye), rice, flour, herrings, oils and oilcake, cork, groceries, metals, and wine and spirits (imports). The commodities exported consist chiefly of iron and steel, oats, and tar. Though Stockholm was founded by Birger Jarl in 1255, it was not made the capital of Sweden till comparatively modern times. Since then, however, it has grown rapidly; pop. 295,789.

Stock Jobbing, the practice of dealing in stocks or shares, especially by persons who buy and sell on the stock exchange on their own account and not for clients, as do the stockbrokers properly so called. The transactions carried out are often entirely of a gambling nature, and the jobber may neither have stock of his own to buy nor to sell. This business is now carried on to an amazing extent.

Stocks, an apparatus formerly used for the punishment of petty offenders, such as vagrants, trespassers, and the like. It consisted of a frame of timber, with holes, in which the ankles, and sometimes the ankles and wrists, of the offenders were confined. In farriery, etc., a frame in which refractory animals are held for shoeing or veterinary purposes. In shipbuilding, a frame of blocks and shores on which a vessel is built. In finance, a stock is a fund employed in the carrying on of some business or enterprise, and divided into shares held by individuals who collectively form a corporation.

Stockton, Francis Richard, an American author; born in Philadelphia, Pa., April 5, 1834; became an engraver and draughtsman; was connected with the Philadelphia "Post," and with "Hearth and Home," New York; joined the editorial staff of "Scribner's Monthly," and became assistant editor of "St. Nicholas"; his earliest writings were odd tales for children, but he has attained an enviable reputation as a writer of highly entertaining short stories. He died in Washington, D. C., April 20, 1902.

Stockton, Robert Field, an American naval officer; born in Princeton, N. J., Aug. 20, 1795; entered the navy in 1810. He was one of the earliest advocates of a steam navy; drew the plans for the steam sloop of war "Princeton," the explosion of one of whose guns at Washington in 1844 caused the death of the secretaries of war and the navy; was actively interested in the construction of the Delaware and Raritan canal; and during the Mexican War, as commander of the naval force on the Pacific, took possession of California in the name of the United States. On his return in 1850 he resigned his commission; entered politics; and in 1851 was elected to the United States Senate, where he introduced and put through a bill for the abolition of flogging in the navy, and also urged the adoption of measures for coast defense. In 1853, however, he retired from the Senate, and devoted himself to the development of the Delaware and Raritan canal. He died in Princeton, N. J., Oct. 7, 1866.

Stockyard, an inclosure for cattle on the way to or at market. With the development of the Central and Western States of the Union there arose a necessity for central markets for the disposition and distribution of the enormous live stock production of these regions. To meet such a demand there were established at convenient points at the convergence of the great lines of railway, immense stockyards. By this term is not to be understood merely inclosures into which live stock

can be driven and herded, but all the buildings and conveniences necessary for the shipping, to all parts of the world, of the animals there collected either "on the hoof" or in the various forms in which their slaughtered carcasses are known to commerce. During the earlier years of this particular branch of domestic enterprise the centers of the business were unsettled, and we find various cities throughout the great cattle-raising regions disputing for supremacy in the amount of business done. Great stockyards were established and still exist in Cincinnati, Indianapolis, East St. Louis, Kansas City, Chicago, and other cities. Owing to the remarkable growth of Chicago, not many years elapsed before that city had outstripped all competitors. Besides the great establishments of the West and Northwest there are like institutions of minor importance distributed throughout other portions of the Union.

Stoddard, Amos, an American military officer; born in Woodbury, Conn., Oct. 26, 1762. He fought in the Revolutionary War; was governor of Missouri Territory in 1804–1805; served in the War of 1812; published "Sketches of Louisiana" (1812); and died in Fort Meigs, O., May 11, 1813.

Stoddard, Charles Warren, an American author; born in Rochester, N. Y., Aug. 7, 1843; for seven years special traveling correspondent of the San Francisco "Chronicle," visiting nearly every quarter of the globe, including five years in the South Seas; from 1885 to 1887 Professor of English Literature at Notre Dame College, Indiana; and from 1889 at the Catholic University of America.

Stoddard, Elizabeth Drew (Barstow), an American novelist and poet; born in Mattapoisett, Mass., May 6, 1823. She was the wife of Richard H. Stoddard, and the author of three distinguished novels, "The Morgesons"; "Two Men" "Temple House," illustrative of English character and scenery (1867). She died Aug. 1, 1902.

Stoddard, Richard Henry, an American poet; born in Hingham, Mass., July 2, 1825. In 1849 he produced a small volume of poems only to suppress it afterward; but 1852 saw the birth of a sturdier collection. From 1853 to 1870 he served in the New York custom house; in 1870–1873 was clerk to General McClellan and for a year city librarian; he did also much reviewing and writing for the publishers. His poems include "Songs in Summer"; "The King's Bell," etc. He wrote also "Life of Humboldt"; "Abraham Lincoln"; "Life of Washington Irving." He died in 1903.

Stoddard, William Osborn, an American author; born in Homer, N. Y., Sept. 24, 1835; was graduated at the University of Rochester in 1857, and after serving for a short time in the Civil War was made secretary to President Lincoln, which office he held till 1864 when he became United States marshal of Arkansas. Subsequently he engaged in business and journalism in New York city, where he also held several public offices under the municipal government. He was the author of numerous stories, sketches and poems, including "Life of Abraham Lincoln," etc.

Stoics, the name appplied to a body of philosophers who flourished first in Greece about the 4th century, but whose influence finally spread over the whole classical world. Their place in the history of philosophy is immediately after Plato and Aristotle. These two mighty geniuses had in turn made the greatest efforts that have ever been made to give finality to philosophy, by putting forth a reasoned theory of the universe. Later thinkers began to seek rather for a practical system by which to live than to again attempt to solve the secret of existence. Hence stoicism is a code of practical rules as much as a reasoned theory; still, as it was the former in a philosophical manner, it necessarily had the latter. The leading thought of the Stoics may be thus stated. They divided philosophy into three parts — logic, physics, and ethics. "Logic supplies the method for attaining to true knowledge; physics teach the nature and order of the universe; and ethics draw thence the inferences for practical life." Though stoicism as a system fell to pieces with the ancient world, it essentially

reappeared in the ascetic forms of Christianity and other religions. But the reason is, not that they were descended from stoicism, but that both came from a common source. Stoicism has its origin in human nature. It is not all truth, but truth is many sided and this system is at least one aspect of it.

Stokes, Frank Wilbert, an American artist; born in Nashville, Tenn. In 1892 while employed as an artist for the Charles Scribner's Sons, he accompanied the Peary relief expedition, and in 1893–1894 he was with the North Greenland expedition. He became identified with the Anthropological Society, the Geographical Society, the Polar Research Club, and the Academy of Natural Sciences in Philadelphia. His publications include essays on "Color in the Far North," etc.

Stola, a loose garment worn by Roman matrons over the tunic. To the bottom of it a border or flounce was sewed, the whole reaching down so low as to conceal the ankles and part of the feet. It was the characteristic dress of the Roman matrons, as the toga was of the men; divorced women or courtesans were not allowed to wear it. It was usually gathered and confined at the waist by a girdle, and frequently ornamented at the throat by a colored border. It had either short or long sleeves, and was fastened over the shoulder by a fibula.

Stole, a long, loose garment extending to the feet; also the sucker or shoot of a plant. In the Roman Catholic Church, a narrow band of silk or stuff, sometimes enriched with embroidery and jewels, worn on the left shoulder of deacons, and across both shoulders of bishops and priests, pendent on each side nearly to the ground; — used in the administration of the sacraments and all other sacred functions.

Stolon, in botany, a branch which, as of the currant, gooseberry, etc., naturally curves or falls down to the ground, where, favored by shade and moisture, it strikes root, and then forms an ascending stem, capable of drawing its nourishment directly from the soil, and, by the perishing of the portion which connects it with the parent stem, at length acquiring an entirely separate existence.

Stomach, in comparative anatomy, a membranous sac, formed by a dilation of the alimentary canal, in which food is received and subjected to the processes of digestion among the Vertebrata. The human stomach is an elongated, curved pouch, from 10 to 12 inches long, and four or five inches in diameter at its widest part, lying almost immediately below the diaphragm, nearly transversely across the upper and left portion of the abdominal cavity, and having the form of a bagpipe. It is very dilatable and contractile, and its average capacity is about five pints. The food enters the stomach through the œsophagus by the cardia or cardiac orifice, and after having been acted on by the gastric juice, is passed on in a semi-fluid or pulpy state through the pylorus into the small intestines. Owing to the recent improvements in electrical apparatus, the physiology and pathology of the human stomach in life is becoming much better known. Medical electricians have recently devised a plan by which the interior of the human stomach may be illuminated for examination. The patient is laid on the operating table and a slender tube, carrying a glass bead on its end, is introduced into the stomach. A small light inside the bead is supplied by fine wires running out through the tube and connected to a small battery. The interior of the stomach is plainly lighted and all its parts are brought into view by a small movable mirror at the end of the tube.

Stomach Pump, in surgery, a suction and force pump for withdrawing the contents of the stomach in cases of poisoning, etc., and also used as an injector. It resembles the ordinary syringe, except that it has two apertures near the end, in which the valve opens different ways, so as to constitute a sucking and forcing passage.

Stomach Staggers, a disease in horses depending on a paralytic affection of the stomach. In this disease the animal dozes in the stable, and rests his head in the manger; he then wakes up and falls to eating, which he continues to do till the stomach swells to an enormous extent, and

the animal at last dies of apoplexy or his stomach bursts.

Stone, the material obtained from rocks; the kind of substance they produce. Also a gem; a precious stone. Something made of stone; as a monument erected to preserve the memory of the dead; a gravestone.

Stone, Charles Pomeroy, an American military officer; born in Greenfield, Franklin co., Mass., in 1826; was graduated at the United States Military Academy and entered the army as lieutenant of ordnance in 1845; served with distinction in the Mexican War, and subsequently settled in California. At the breaking out of the Civil War he was the first volunteer officer sworn into the service; after a short period of military duty he was arrested and imprisoned in Fort Lafayette, where he remained for a year; after his release he rejoined the army and went with General Banks up the Red River, serving till the end of the war; resigned from the army in 1864. He subsequently went to Egypt and served as chief of staff in the Egyptian army, receiving the title of pasha. He was an engineer and his last work was as engineer-in-chief in charge of the building of the pedestal of the Statue of Liberty in New York harbor. He died in New York city, Jan. 24, 1887.

Stone, Charles Wellington, an American educator; born in Templeton, Mass., Dec. 13, 1853; was graduated at Harvard University in 1874; founded a college preparatory school in 1879; and was secretary of the Handel and Haydn Society in 1890–1897. His publications include "Needles of Pine," school books; and essays on historical and educational subjects.

Stone, Ellen M., an American missionary; born in Roxbury, Mass., July 24, 1846. She went to Bulgaria as a missionary in 1878. About Sept. 1, 1901, with a companion, Mme. Tsilka, a native Bulgarian teacher, she was kidnapped by brigands who a few days later demanded an indemnity of $110,000, the money to be paid within 30 days. On Sept. 5, the news of Miss Stone's detention reached the United States, and her friends immediately notified the State Department at Washington and began a popular subscription to raise the required amount. The United States government communicated with the Bulgarian and Turkish authorities, who ordered troops to search for the retreat of the brigands for the purpose of releasing the captives. The troops were later ordered to cease pursuit, presumably at the instance of the United States, fear being expressed lest the presence of the soldiers would lead to the torture or murder of Miss Stone. More than one-half of the indemnity was raised by subscription, readers of the "Christian Herald" being large contributors, and it was intimated that the United States would guarantee the whole amount and afterward demand damages from the Turkish government for the outrage. On Feb. 6, $72,500 of the ransom demanded was paid, and on Feb. 23 Miss Stone was released.

Stone, James Samuel, an American clergyman; born in England, April 27, 1852; was graduated at the Philadelphia Divinity School in 1877 and at the Cambridge Theological School in 1880; was ordained in the Protestant Episcopal Church in 1877; and held pastorates in Toronto, Montreal, and Philadelphia in 1877–1895. In the latter year he became rector of St. James Church, Chicago.

Stone, Lucy (Blackwell), an American reformer; born in West Brookfield, Mass., Aug. 13, 1818. She was graduated at Oberlin College in 1847. In 1855 she married Dr. Henry B. Blackwell, retaining her own name. She published a protest, "Taxation without Representation." In 1869 she helped organize the American Woman's Suffrage Association; became connected with the "Woman's Journal" in 1872, and was editor after 1888. Her lectures on woman suffrage made her known throughout the country. She died in Boston, Mass., Oct. 18, 1893.

Stone, Marvin Chester, an American inventor; born in Portage co., O., in 1842; was the inventor of a machine for making paper cigarette holders; a process for making paper "straws" for use with cold drinks; and a method of coloring china in imitation of the famous "peach-blow"

vase. He was highly successful as a manufacturer and engaged extensively in philanthropic projects. He died in Washington, D. C., May 17, 1899.

Stone, Melville Elijah, an American journalist; born in Hudson, Ill., Aug. 22, 1848. In 1881 with Victor F. Lawson he founded the Chicago "Morning News" which subsequently became the Chicago "Record." Owing to ill health he retired from newspaper work in 1888 and spent several years abroad. Returning to the United States he settled in New York city, and was made general manager of the Associated Press.

Stone, Ormond, an American astronomer; born in Pekin, Ill., Jan. 11, 1847; Director of the Cincinnati Observatory (1875); and Professor of Astronomy and Director of the Observatory of the University of Virginia (1882). His principal astronomical work has been in the field of double-star observations and the discovery of nebulæ. He was editor of the "Annals of Mathematics," published at the University of Virginia.

Stone Age, or **Age of Stone,** is a term used in archæology to denote the condition of a people using stone as the material for the cutting tools and weapons which, in a higher condition of culture, were made of metals. The expression "age," when used in this connection, is not therefore significant of a fixed period in chronology, but implies merely the time, longer or shorter, earlier or later, during which the condition subsisted. The duration of such a condition must necessarily have varied from various causes in different areas, and chiefly in consequence of contact with higher degrees of culture. Populations placed in remote situations, and on that account remaining uninfluenced by such contact — like the islanders of the South Pacific and the Eskimos of the extreme North for instance — have remained in their stone age to the 20th century. On the other hand, the populations of the European area, in portions of which there were successive centers of high culture and civilization from a very early period, had all emerged from their stone age, through the use of bronze, many centuries before the Christian era.

Stone Chat, an insessorial bird of the family of warblers. The stone chat is common in Europe, and frequents moors and other open wastes.

STONE CHAT.

Its color on the upper part generally is black, the belly is yellowish white, and the breast a light chestnut brown. It runs with much celerity. It is accidental in the N. part of North America.

Stone Fly, a genus of insects. The hind wings are broader than the fore wings, and folded at the inner edge. The body is elongated, narrow, and flattened; the wings fold close to the body, which generally bears two terminal bristles. A number of species are well known to anglers as an attractive lure for fishes.

Stone Fruits, a name popularly applied to those fruits in which the single kernel is enclosed in a stone, and this enveloped in an edible pulpy mass covered by a thin skin. Examples are found in the cherry, peach, plum, olive, etc. Botanically this kind of fruit is called a drupe, the skin being the epicarp, the pulp the mesocarp, and the hard shell of the seed the endocarp.

Stoneman, George, an American military officer; born in Busti, N. Y., Aug. 8, 1822; was graduated at the United States Military Academy in 1846. In August, 1861, he became Brigadier-General of volunteers and chief of cavalry in the Army of the Potomac. He commanded the cavalry in the Peninsular campaign of 1862, and distinguished himself in the battle of Williamsburg on May 5 of that year; was promoted Major-General of volunteers in the following November. He was promoted colonel of the 21st

Infantry in July, 1866, and was brevetted Brigadier-General and Major-General U. S. A., in recognition of his meritorious services. In August, 1871, he resigned from the army and settled in California, of which State he was Democratic governor in 1883–1887. He died in Buffalo, N. Y., Sept. 5, 1894.

Stone Plover, a large species of plover. It appears in England at the latter end of April, frequents open hilly situations; makes no nest, but lays two eggs on the bare ground, and emigrates in small flocks about the end of September.

Stonewall Jackson, a name given to Gen. T. J. Jackson during the Civil War.

Stoneware, a very hard kind of pottery, with which are made jars, drain pipes, and a variety of chemical utensils. It is constituted of plastic clay, united in various proportions with some felspathic mineral sands of different kinds, and in some cases with cement, stone, or chalk. These mixtures are then subjected to a heat sufficiently great to cause a partial fusion of the mass. This condition of semi-fusion is the distinguishing character of stoneware. The finer varieties of stoneware are made from carefully selected clays, which when burnt will not have much color. These are united with some fluxing substance, by which the particular state of semi-fusion above mentioned is brought about. Formerly the glaze of stoneware was always a salt glaze; recently, however, it has been customary to glaze with a mixture of Cornish stone, flint, etc., as in the manufacture of earthenware.

Stone Worship, divine honors paid to stones either as the embodiments or the representatives of deities. It is a part of stock-and-stone worship, dating from remote antiquity, and was once widespread. Grote notes that it existed among the ancient Greeks. It lingered on in France and Europe till the Early Middle Ages, in Norway till the end of the 18th century.

Stony Point, a small rocky promontory on the W. bank of the Hudson river, opposite Verplanck's Point, 42 miles N. of New York city, at the entrance to the Highlands. A fortification of some importance in the Revolutionary War, it was captured and strengthened by the British, but was recovered in a night attack by Wayne. It is connected by a marsh with the shore, and supports a lighthouse and fog-bell tower. In the village here is the house where Benedict Arnold held his treasonable interviews. The property at Stony Point, consisting of 34 acres, has been acquired by the State for a public park, $25,000 having been appropriated for that purpose by the legislature in 1897. With this amount the site of "Mad" Anthony Wayne's midnight attack has been bought and many improvements made. The locality has been made accessible to the public, the Revolutionary fortifications have been properly marked, and the custody of the park has been given to the American Scenic and Historic Preservation Society. It is chiefly through the zeal shown by this society that the acquisition of the property by the State was assured, and Stony Point will now hold a more prominent rank in the Hudson river landmarks.

Storer, Francis Humphreys, an American chemist; born in Boston, Mass., March 27, 1832; was chemist of the United States Exploring Expedition in 1853; studied in Europe in 1855–1857; and followed his profession in Boston in 1857–1865. He held the chair of industrial and general chemistry at the Massachusetts Institute of Technology in 1865–1870. In the latter year he became Professor of Agricultural Chemistry at the Bussey Institution, Harvard University.

Storer, Horatio Robinson, an American physician; born in Boston, Mass., Feb. 27, 1830; was graduated at Harvard University in 1850, and at its Medical Department in 1853. Later, he was Professor of Obstetrics and Medical Jurisprudence at Harvard till 1865; held the chair of obstetrics and medical jurisprudence at the Berkshire Medical College in 1865–1869; and invented several surgical and gynæcological instruments.

Stork, in ornithology, any individual of the genus Ciconia. In form the storks resemble the herons, but are more robust, and have larger bills,

shorter toes, with a non-serrated claw on the middle toe. They inhabit the vicinity of marshes and rivers, where they find an abundant supply of food, consisting of frogs, lizards, fishes, and even young birds. Storks are migratory, arriving from the S. at their breeding haunts in the early spring, and departing again in the autumn.

WHITE STORK.

Storm, a violent commotion or disturbance of the atmosphere, producing or attended by wind, rain, snow, hail, or thunder and lightning; a tempest; often applied to a heavy fall of rain, snow, etc., without a high wind.

Storm Glass, a tube containing a liquid holding a solution which is sensible to atmospheric changes. In clear weather the substance is seen to settle near the bottom of the tube, the liquid remaining comparatively clear; previous to a storm the substance rises, causing the liquid to present a turbid and flocculent appearance.

Stormy Petrel, in ornithology, a bird common in the North Atlantic. In general appearance it is not unlike a swift, of a sooty black color, with a little white on the wings, and some near the tail. It is popularly believed to be a harbinger of bad weather, and is called by sailors Mother Carey's Chicken, a name which is also applied to other species.

Storrs, Emory Alexander, an American lawyer; born in Hinsdale, N. Y., Aug. 12, 1835; removed to Chicago in 1859. He became prominent as a criminal laywer, and for several years figured as counsel in almost every important criminal case in the Chicago courts. He became well known as a presidential campaign orator, and was a delegate-at-large to the National Republican Conventions of 1868, 1872, and 1880, where he was influential in shaping the platform of the party. He died in Ottawa, Ill., Sept. 12, 1885.

Storrs, Richard Salter, an American clergyman; born in Braintree, Mass., Aug. 21, 1821; graduated at Amherst College in 1839 and at the Andover Theological Seminary in 1845. In 1846 he was called to the Church of the Pilgrims in Brooklyn, N. Y., where he was pastor emeritus at the time of his death. He was one of the founders of the "Independent" in 1848 and remained on its editorial staff till 1861. He died in Brooklyn, N. Y., June 5, 1900.

Story, Joseph, an American jurist; born in Marblehead, Mass., Sept. 18, 1779. In 1811 he was appointed an associate justice of the United States Supreme Court, and held the office till his death. He died in Cambridge, Mass., Sept. 10, 1845.

Story, William Edward, an American educator; born in Boston, Mass., April 29, 1850; was graduated at Harvard College in 1871; studied physics and mathematics in Europe in 1871–1875, was assistant professor and Professor of Mathematics at Johns Hopkins University in 1876–1889; and in the latter year he accepted the chair of mathematics at Clark University. He became identified with several mathematical and other learned societies. His publications include contributions to technical periodicals.

Story, William Wetmore, an American sculptor, son of Judge Joseph; born in Salem, Mass., Feb. 19, 1819; was graduated at Harvard in 1838; was admitted to the bar and practised five years; went to Rome to study art and made Italy his home,

Among his sculptures are: a statue of Edward Everett (in the Boston Public Garden); and one of Prescott at Bunker Hill; "Cleopatra"; "Semiramis"; "Judith"; "Jerusalem"; "Medea"; "The Sibyl"; etc.; and busts of Judge Story, Lowell, Bryant, etc. He published: "Treatise on the Law of Sales of Personal Property," "Life and Letters of Joseph Story," "Poems," "The American Question," etc. He died in Vallombrosa, near Florence, Italy, Oct. 7, 1895.

Stow, Baron, an American clergyman; born in Croydon, N. H., June 16, 1801; was graduated at Columbia College in 1825. He was one of the most eloquent and prominent preachers in the Baptist Church. His work as a member of the Executive Committee of the American Missionary Union greatly strengthened that movement. Died in Boston, Mass., Dec. 27, 1869.

Stowe, Calvin Ellis, an American educator; born in Natick, Mass., April 6, 1802; was graduated at Bowdoin College in 1824, at Andover Seminary in 1828; and edited the Boston "Recorder" in 1829–1830. He was Professor of Greek at Dartmouth College in 1830–1832, and of Sacred Literature in Lane Theological Seminary, Cincinnati, O., in 1833–1835. He married Harriet Elizabeth Beecher in January, 1836, and went to Europe to examine the public school systems. He was professor at Bowdoin in 1850; and at Andover in 1852–1864. His publications include "Lectures on the Poetry of the Hebrews," "Report on Elementary Education in Europe," etc. He died in Hartford, Conn., Aug. 22, 1886.

Stowe, Harriet Elizabeth Beecher, an American novelist, daughter of Lyman Beecher and sister of Henry Ward Beecher; born in Litchfield, Conn., June 14, 1811; was educated at Litchfield Academy and at the school of her sister Catherine in Hartford; at the age of 14 she began teaching; in 1832 removed to Cincinnati, O. In 1836 she was married to Prof. Calvin Ellis Stowe; in 1850 she removed to Brunswick, Me., and later to Andover, Mass.; in 1864 she settled in Hartford, Conn., where she spent the remainder of her life. She published: "The Mayflower; or Sketches of Scenes and Characters among the Descendants of the Pilgrims," "Uncle Tom's Cabin; or, Life among the Lowly," and a large number of other works. Her best-known work, "Uncle Tom's Cabin" (suggested by the life of Josiah Henson) has been translated into many languages, its sale exceeding that of any previous work of English fiction. She died in Hartford, Conn., July 1 1896.

Stowell, Charles Henry, an American author; born in Perry, N. Y., Oct. 27, 1850; was graduated at the Medical Department of the University of Michigan in 1872; held the chair of physiology at the University of Michigan in 1876–1885; followed his profession in Washington, D. C., in 1885–1897; afterward applied himself to technical literature. His publications include "Primer of Health"; "Microscopical Diagnosis"; "Structure of Teeth"; etc. He also became editor of several monthly journals, including "Practical Medicine"; "Food"; "The Microscope"; "Trained Motherhood"; and the "National Medical Review."

Stowell, William Scott, Lord, an English jurist, eldest brother of Lord Eldon; born in Heworth, Durham, England, Oct. 17, 1745. As a barrister at Doctors' Commons he obtained a large practice, and his promotion was rapid. In 1788 he was appointed judge in the Consistory Court, knighted, and nominated a privy councillor. In 1798 he became judge of the Court of Admiralty. Both as an ecclesiastical and admiralty judge he won high distinction. He wrote no systematic treatise or textbook, but his judgments were admirably reported; and he was long the highest English authority on the law of nations. He represented Oxford in the House of Commons for 20 years; but took no part in the business of Parliament. At the coronation of George IV. he was raised to the peerage under the title of Baron Stowell of Stowell Park. In 1828 he retired from the bench. He died Jan. 28, 1836.

Strabismus, squinting arising from the optic axes of the eyes in certain individuals not being as in normal cases, parallel. Strabismus may affect one or both eyes, and may be upward, downward, inward, outward, or in the intermediate directions.

Strabo, a noted geographer; born in Amasea, Pontus, about 63 B. C. He seems to have been possessed of ample means which he expended on travel, the results of which, after a lifetime's toil, he has bequeathed to us in his "Geography." But he also devoted himself to philosophy, and is cited by Plutarch (Lucullus 28, Sulla 26) as Strabo, the philosopher. His work entitled "Historica Hypomnemata" in 43 books is supposed to have contained a narrative of the events from the close of the "History" of Polybius to the battle of Actium. His geography in seventeen books has been preserved entire with the exception of the seventh book of which there is only an epitome. The first two books are introductory, the next ten treat of Europe, the four following of Asia, and the last of Africa.

Stradivari, Antonio (Stradivarius), an Italian violin maker; born in Cremona, Italy, about 1649. He was a pupil of Nicolo Amati, in whose employment he remained till 1700, when he began making on his own account. It was he who settled the typical pattern of the Cremona violin, and his instruments, for tone and finish, have never yet been excelled. He died in Cremona Dec. 17, 1737.

Strafford, Thomas Wentworth, Earl of, an English statesman, the eldest son of Sir William Wentworth; born in London, April 13, 1593. He sat in Parliament for Yorkshire for a number of years, and when Charles I. asserted that the Commons enjoyed no rights but by royal permission, he was strongly opposed by Sir Thomas Wentworth. In 1628 he was successively created Baron Wentworth, privy-councillor, and President of the North. Archbishop Laud selected him to proceed to Ireland as lord deputy in 1632. Here he greatly improved the state of the country, both as regarded law, revenue, and trade. For these services he was created Earl of Strafford. When the Long Parliament met, the very first movement of the party opposed to arbitrary power was to impeach Strafford of high treason. His defense, however, was so strong that the original impeachment was deserted for a bill of attainder. The bill passed the Commons by a great majority, and was feebly supported by the House of Lords. The king endeavored to secure his safety, but yielded to the advice of his counsellors, backed by a letter from Strafford himself, who urged him, for his own safety, to ratify the bill. Strafford was accordingly beheaded on Tower Hill May 12, 1641.

Straight-out Democrats, a political party which arose in the United States in 1872, their distinguishing tenet being that governments should be limited to police functions.

Strangles, a disease attacking horses, generally between the ages of three and five years. It consists of an abscess, which occurs between the branches of the lower jaw. It is considered contagious. The name is also applied to a similar infectious disease in swine.

Strangling Bug, a large water bug, which made its appearance in New Jersey and other places in the summer of 1898. It was given the name of "strangling bug" from its tendency to fasten its hooked claws into the neck of its victim.

Strangulation, an act of violence in which constriction is applied directly to the neck, either around it or in the forepart, in such a way as to destroy life. This definition obviously includes hanging, which differs from other forms of strangulation only in that the body is suspended. The direct cause of death in the great majority of cases is arrest of the respiration owing to pressure on the windpipe — i. e., asphyxia. If much violence is used, death may be produced by direct injury to the upper part of the spinal cord from fracture or dislocation of the cervical vertebræ (as is now the rule in execution by hanging), or by syncope from shock, and in such cases must be almost instantaneous; on the other hand, if constriction is so applied as to compress the great vessels in the neck and not the windpipe, as may happen in "garotting," it is due to coma, and is somewhat slower than in cases of asphyxia. Or if both vesels and windpipe are compressed, coma and asphyxia may both contribute to cause death.

Strassburg, a town and fortress of Germany, in Alsace; capital of the ter-

ritory of Alsace-Lorraine; on the Ill; about 2 miles W. of the Rhine, to which its glacis extends; 250 miles E. by S. of Paris, and about 370 miles S. W. of Berlin. By means of canals which unite the Ill with the Rhine, Rhone, and Marne, it is brought into communication with the Atlantic and the Mediterranean. It has always been regarded as a place of strategical importance, and strong fortifications and a pentagonal citadel were erected by Vauban in 1682–1684. The chief building is the cathedral, a structure which presents the architectural styles of the centuries from the 11th to the 15th, in which it was built, but whose main element is Gothic. It is surmounted by towers 466 feet high, has a splendid W. facade, with statues and great rose window, fine painted glass windows, and a famous astronomical clock, made in 1547–1580. The other notable buildings are the Church of St. Thomas, the Temple-Neuf or Neukirche, the old Episcopal palace, the town hall, the new university building, opened in 1884, and the new imperial palace. United to France in 1681, Strassburg was ceded with the territories of Alsace and Lorraine to Germany in 1871. Pop. (1900) 150,-268.

Strategy, Board of, a board of United States naval officers organized at the commencement of the Spanish-American War in 1898, with headquarters at the Navy Department in Washington, D. C. The board consisted of four members, Rear-Admiral Montgomery Sicard, Capts. A. T. Mahan, A. S. Crowninshield, and A. S. Barker, all naval experts. The board had charge of the conduct of the war at sea and so far as possible directed the battles, leaving only the details to the fleet commanders. Constant telegraphic communication was kept up between the fleets and the board, and the general plan of the war as evolved by the latter was carried out as nearly as possible.

Stratford-on-Avon, a town of Warwickshire, England; 8 miles S. W. of Warwick; on the right bank of the Avon river, famous as the home of Shakespeare. "Shakespeare's House," that is, the house in which he was born, having been purchased by subscription and dedicated to the public in 1847, was restored in 1859, and now contains the Shakespeare library and museum, the Stratford portrait, etc. The grounds are now open free. In the cruciform parish church are his grave and portrait bust, also the font in which he was baptized. The old parish register with the entry of Shakespeare's baptism and burial, is shown near the N. door of the church. The central tower of the church dates from the 13th century. Other monuments are the Shakespeare Memorial Theater, built in 1879 at a cost of over $200,000, intended for occasional Shakespearean celebrations, and possibly as a dramatic college, and having attached to it, a Shakespeare library and museum; the Shakespeare fountain, built by an American, and the Shakespeare monument. Apart from Shakespeare, the town is interesting as containing the early home of the mother of John Harvard, founder of America's oldest university. The town owes its name to the old ford of the Avon parallel to the bridge on the road from London to the N. W.

Stratum, a bed or mass of matter spread out over a certain surface, in most cases by the action of water, but sometimes also by that of wind. The method in which stratification by the agency of water has been effected in bygone times may be understood by a study of the manner in which successive layers of gravel, sand, mud, etc., are deposited in a river or running brook. The same process has been at work through untold periods of time. The greater part of the earth's crust, in nearly every land, is found to be thus stratified. Most strata have a dip and a strike. The fossils will in most cases show whether strata are lacustrine, fluviatile, or marine. They prove that deposit was very slow. One stratum may overlap another, or a stratum may thin out, or an outcrop of it may exist. As a rule, the lowest are the oldest, but some great convulsion may have tilted over strata in limited areas, so that the oldest have been thrown uppermost. A study of the same beds over a wide expanse of country prevents error in estimating the relative age of strata thus reversed. The thickness of the stratified rocks is believed to be about 20 miles, or 100,000 feet.

Straus, Oscar Solomon, an American diplomatist; born in Ottenberg, Rhenish Bavaria, Dec. 23, 1850; came to the United States in 1854. In 1887 he was appointed United States minister to Turkey and again in 1898, which office he held till 1900; and on Jan. 14, 1902, President Roosevelt appointed him a permanent member of the Committee of Arbitration at The Hague, to succeed the late ex-President Benjamin Harrison.

Strauss, Johann, an Austrian musician; born in Vienna, Oct. 25, 1825; began the composition of waltzes at the age of six, and before he was 18 organized and conducted an orchestra and captivated the Vienna public with waltzes and polkas of his own composition. After composing dance music for many years, he undertook an operetta, "Indigo," which was produced in 1871, and met with instantaneous success. Subsequently he produced "The Forty Thieves"; "Cagliostro"; "The Gypsy Baron"; etc., and numerous waltzes, the best known being "The Beautiful Blue Danube." He died in Vienna, June 3, 1899.

Strauss, Joseph, an American naval officer; born in Mount Morris, N. Y., Nov. 16, 1861; was graduated at the United States Naval Academy in 1881. He invented, with Admiral Sampson, the superposed turret system of mounting guns on battleships in 1895; cruised in South American waters in 1896–1900; and engaged in the blockade of the Cuban coast in 1898. On Jan. 3, 1900, he was placed in charge of the United States Naval Proving Ground at Indian Head.

Straw. Apart from the importance of the straw of various cereal plants as a feeding and bedding material in agriculture, such substances also possess no inconsiderable value for packing merchandise, for thatching, for making mattresses, and for door mats. Straw is also a paper-making material of some importance, and split, flattened, and colored, it is employed for making a mosiac-like veneer on fancy boxes. But it is in the form of plaits that straw finds its most outstanding industrial application, these being used to an enormous extent for making hats, and bonnets and for small baskets, etc.

Straw Bail, worthless security furnished by an offender against the law for his appearance for trial, the bonds given being fraudulent statements of property owned by the person offering it.

Strawberry, a well-known fruit and plant. It is remarkable for the manner in which the receptacle, commonly called the fruit, increases and becomes succulent; but the true fruit is the small seeds or achenes on the surface of the receptacle. The species are perennial plants throwing out runners which take root and produce new plants; they are natives of temperate and cold climates in America, Europe, and Asia.

Street, Alfred Billings, an American author; born in Poughkeepsie, N. Y., Dec. 17, 1811. In 1839 he removed to Albany, N. Y., where he practised law for a number of years. Among his best known poems are "The Burning of Schenectady"; "Drawings and Tintings"; "Fugitive Poems"; etc. He died in Poughkeepsie, N. Y., June 2, 1881.

Street Railways, iron ways laid along a road, or the streets of a town or city, on which cars for passengers are drawn by horses, steam, electricity, or other mechanical means. The first use of cable cars was in San Francisco, Cincinnati, and other Western cities, where the steep grade of certain streets rendered horse cars impracticable. Later they were generally adopted throughout the United States as a substitute for horse cars on account of their greater efficiency. Electricity was employed in storage batteries and by means of overhead trolleys, but the most satisfactory form is that of the underground electric conductor, which has been adopted by many of the large cities. A general feature of this form of street railway motive power is the large number of accidents due to the speed of the cars.

Stress, a convenient term introduced by Professor Rankine to express the mutual action between any two portions of matter. Thus the pressure between a table and a book resting on it is of the nature of a stress, which has two aspects, according as we fix our attention on the table or the book. With reference to the former the pressure is downward, with reference to

the latter upward, and these two forces, which according to Newton's third law are equal and opposite, form when regarded as a whole the stress.

Stricture, a term employed in surgery to denote an unnatural contraction, either congenital or acquired, of a mucous canal, such as the urethra, œsophagus, or intestine. When, however, the affected part is not mentioned, and a person is stated to suffer from stricture, it is always the urethral canal that is referred to. Contraction of this canal may be either permanent or transitory; the former is due to a thickening of the walls of the urethra in consequence of organic deposits and is hence termed organic stricture; while the latter may be due either to local inflammation or congestion, or to abnormal muscular action; the first of these varieties may be termed inflammatory or congestive stricture, and the second spasmodic stricture. The last named form seldom exists except as a complication of the other kinds of stricture.

Strikes, a term applied to concerted movements on the part of workingmen to quit work unless their employers agree to some demand made by the men. The earliest strike of which there is a record in the United States occurred in Philadelphia in 1796, when 300 shoemakers struck for higher wages. The struggle was successful. In 1848 occurred a great strike of weavers at Fall River, and in 1877 occurred the first railroad strike. From 1888 to 1891 there were a great number of important strikes, including the street car strike of New York city. In 1892 there were six great strikes, including the one at Homestead, Pa., during which 10 men were killed, the militia was called out, and such destitution prevailed that the government ordered an investigation. In 1892 there were two great railroad strikes. Perhaps the most notable strike in the history of the United States occurred in 1894 among the railroad employes of the roads centering at Chicago. Fully 100,000 men were affected. The strike originated among the 3,000 employes of the Pullman Car Company, who demanded higher wages. Just as their strike was about to fail, the cause of the strikers was espoused by the American Railway Union, an organization numbering over 100,000 railroad men. These men refused to handle Pullman cars, and a great tumult ensued. An immense amount of rioting followed, and the militia being unable to cope with the thousands of strikers, the President was obliged to call on the Federal troops to restore order, after first issuing two proclamations to the strikers. The railroads lost in property during this strike $700,000, and in earnings $5,000,000. Twelve persons were killed and nearly 700 arrested.

Stringham, Silas Horton, an American naval officer; born in Middletown, N. Y., Nov. 7, 1798; joined the navy in 1809; and served on the frigate "President." Promoted captain in 1841 he served on the "Ohio" during the bombardment of Vera Cruz in 1847. At the outbreak of the Civil War he was ordered to Washington to advise concerning war preparations. He strongly advocated the relief of Fort Sumter, but before his advice was followed the place was reduced. He was later given the command of the North Atlantic Blockading Squadron, which bombarded and received the surrender of the forts at Hatteras Inlet. This was the first important naval victory of the war. In December, 1861, Stringham was promoted commodore and retired from active service owing to age; and in July, 1862, was promoted rear-admiral on the retired list. He died in Brooklyn, N. Y., Feb. 7, 1876.

Strobel, Edward Henry, an American educator; born in Charleston, S. C., Dec. 7, 1855. He was secretary of the United States legation in Madrid, Spain, in 1885-1890; a special United States agent to Morocco in 1888 and 1889; and United States minister to Chile in 1894–1897. He was counsel for the latter country before the United States and Chilean Claims Commission in 1899. His publications include: "The Spanish Revolution," etc.

Strong, Augustus Hopkins, an American educator; born in Rochester, N. Y., Aug. 3, 1836. In 1872 he became President and Professor of Systematic Theology in the Rochester Theological Seminary. He was the author of "Systematic Theology."

Strong, James, an American educator; born in New York city Aug. 14, 1822; was Professor of Biblical Literature at Troy University in 1858–1861; and became Professor of Exegetical Theology at Drew Theological Seminary in 1868. The principal work of his life was the "Cyclopædia of Biblical, Theological, and Ecclesiastical Literature" (10 vols. 1867–1881; 2 supplement vols. 1885-1887). Died in Round Lake, N. Y., Aug. 7, 1894.

Strong, Josiah, an American clergyman; born in Naperville, Ill., Jan. 19, 1847; settled with his parents in Hudson, O., in 1852. He was secretary of the Evangelical Alliance for the United States; from 1886 to 1898, president of the League for Social Service, 1898–1902; is president of the American and Foreign Christian Union, has written books of great value for the religious betterment of humanity, and is one of America's leading divines.

Strong, Latham Cornell, an American author; born in Troy, N. Y., June 12, 1845. He was editorially connected with the Troy "Whig." His published volumes include: "Castle Windows"; "Pots of Gold." He died in Tarrytown, N. Y., Dec. 17, 1879.

Strong, Nathan, an American Congregational clergyman; born in Coventry, Conn., Oct. 16, 1748. He was a chaplain in the Revolutionary army; projected and sustained the "Connecticut Evangelical Magazine," founded and conducted the Connecticut Missionary Society and compiled the "Hartford Collection of Hymns." He died in Hartford, Conn., Dec. 25, 1816.

Strong, Theodore, an American mathematician; born in South Hadley, Mass., July 26, 1790. He was professor of Natural Philosophy and Mathematics at Hamilton College in 1816–1827; and held a similar chair at Rutgers College in 1827–1861. In the realm of pure mathematics he was conceded to have no superior. After the ablest mathematicians of Europe had failed to solve the irreducible case of cubic equations left by Cardan, he discovered its solution by a direct method. He was also the discoverer of the method of extracting any root of any integral number by a direct process. He died in New Brunswick, N. J., Feb. 1, 1869.

Strother, David Hunter, pseudonym Porte Crayon; an American author; born in Martinsburg, Va., Sept. 16, 1816. His series of sketches contributed to "Harper's Magazine," were great popular favorites; they were republished in book form under the titles "The Blackwater Chronicle," and "Virginia Illustrated." He died in Charleston, W. Va., March 8, 1888.

Strychnine, a highly poisonous alkaloid, discovered in 1818 by Pelletier and Caventou in St. Ignatius' beans, and shortly afterward in Nux vomica seeds. It is obtained, together with brucine, by boiling Nux vomica seeds in dilute sulphuric acid till they become soft, crushing the seeds, and adding to the expressed liquid an excess of calcium hydrate, which throws down the two alkaloids. On washing with cold alcohol, brucine is dissolved, leaving strychnine in an impure state. Strychnine was scarcely heard of as a means of poisoning before the year 1855, the date of the Rugeley murders in England, for which Palmer was tried at the Old Bailey in 1856, and executed. The symptoms are very marked, and comprise violent tetanic convulsions, laborious respiration, from the tightening of the chest muscles, spasmodic contraction of the heart, and rigidity of the spinal column. These are succeeded by a short calm, after which they are again repeated till death or progress toward recovery ensues, the time being about two hours after taking the poison.

Stryker, Melancthon Woolsey, an American educator; born in Vernon, N. Y., Jan. 7, 1851. In 1892 he became president of Hamilton College. He was the author of numerous hymns and poems including, "Song of Miriam"; "Lattermath"; "Letter of James"; etc.

Stryker, William Scudder, an American historian; born in Trenton, N. J., June 6, 1838. During the Civil War he served on General Gillmore's staff and distinguished himself at the capture of Morris Island and in the assault on Fort Wagner. From 1867 till his death he was adjutant-general of New Jersey, and in 1874 was brevetted Major-General. He published "Official Register of the Officers and Men of New Jersey in the Revolutionary War"; "The New Jer-

sey Volunteers"; etc. He died in Trenton, N. J., Oct. 29, 1900.

Stuart Family, The. This house derives its name from the important office of steward of the royal household of Scotland. The founder of the house seems to have been a Norman baron named Alan, whose second son Walter entered the service of David I. of Scotland, and became dapifer or steward of the royal household. Walter, the sixth steward, married Marjory, daughter of King Robert I., a union which secured to his family the crown of Scotland in the event of the extinction of the royal line. He died in 1326, and was succeeded by his son, Robert, the seventh steward, who, on the death of David II. without issue, succeeded to the crown as Robert II. in 1371.

Succeeding monarchs of this house, with dates of their accession, were, Robert III. (1390); James I. (1424); James II. (1437); James III. (1460); James IV. (1488); James V. (1513); Mary Stuart (1542); James VI. of Scotland (1568); and of England, James I. (1603); Charles I. (1625); Charles II. (1649); and James II. of England (1685). The last male representative of the branch of the Stuart line descended from Henrietta Maria, daughter of Charles I., was Francis V., ex-Duke of Modena, who died childless Nov. 20, 1875.

Stuart, Charles Edward Lewis Casimir, known as "The Young Pretender," eldest son of James Francis Edward, known as "The Old Pretender," and who was the son of James II. of England. and VII. of Scotland. driven out by the people on account of his tyranny and his efforts to establish the Roman Catholic faith. "The Young Pretender" was born at Rome, 1720, and died at Rome in 1788. In 1745 he landed in Scotland, and the highlanders and many lowlanders gathered to his standard. He defeated the English at Preston, Pans and Falkirk, but his army was utterly crushed at Culloden. His followers were executed wherever captured, and he wandered about with a reward of $150,000 offered for his head, but shielded by loyal peasants who had probably never seen a gold piece. He escaped to the continent, and lived a life made wretched by thoughts of those who had perished in his cause.

Stuart, Charles Macaulay, a Scotch-American educator; born in Glasgow, Scotland, Aug. 20, 1853. He was assistant editor of the "Northwestern Christian Advocate" in 1886–1896. In the latter year he was made Professor of Sacred Rhetoric at the Garrett Biblical Institute.

Stuart, Gilbert Charles, an American painter; born in Narragansett, R. I., Dec. 3, 1755. In 1775 he made his way to London, where he led for two years a Bohemian life; upon his talent being recognized, he became a fashionable portrait painter. In 1792 he returned to the United States, and painted portraits of Washington, Jefferson, Madison, John Adams, and many of the distinguished men of the period. He died in Boston, July 27, 1828.

Stuart, James Elwell Brown, an American military officer; born in Patrick co., Va., in 1832; was graduated at the United States Military Academy in 1854; distinguished himself in the campaign against the Indians in 1857, and became captain in 1860. In 1861 he resigned his commission in the United States army and entered the Confederate service. He was in charge of the Confederate cavalry at the first battle of Bull Run. He was promoted Major-General and subsequently was engaged in skirmishes and commanded troops at Chancellorsville and at Gettysburg. In 1864 he opposed Sheridan's cavalry, but was mortally wounded in a fight at Yellow Tavern. He died in Richmond, Va., May 11, 1864.

Stuart, Moses, an American theologian; born in Wilton, Conn., March 26, 1780. He died in Andover, Mass., Jan. 4, 1852.

Stuart, Ruth McEnery, an American author; born in Avoyelles parish, La., in 1856. Her published writings include: "A Golden Wedding, and Other Tales"; "Sonny"; etc.

Stuckenberg, John Henry Wilburn, an American clergyman; born in Bramsche. Germany, Jan. 6, 1835. During the Civil War he was present, as chaplain of the 145th Pennsylvania Volunteers, at the battles of Fredericksburg, Chancellorsville, and Gettysburg. He was professor in the

Theological Department of Wittenberg College in 1873–1880, and pastor of the American Church in Berlin, Germany, in 1881–1894. His publications include, "Christian Sociology"; "The Final Science," etc. Died 1903.

Sturgeon, a genus of ganoid fishes, the skin being either naked or with bony plates, as in the sturgeon. The skull is cartilaginous, but covered externally with bony plates belonging to the skin. The head projects into a flat, pointed snout, provided with fleshy tentacles or barbels; and on the under surface of this snout, some distance behind its extremity, is the mouth, which is without teeth, and capable of protrusion. The gill opening is wide. There are two pairs of fins, the pelvic being situated a long way back, close to the anus. There are many species of sturgeon, all confined to the Northern Hemisphere. They live in the sea and great lakes, and ascend the great rivers. All are of considerable size, and supply valuable commodities, for which they are regularly captured on a large scale. These commodities are their flesh, which is palatable and wholesome, their roe and their air bladders, from which isinglass is made.

Stuttgart, capital of the Kingdom of Wurtemberg, Southern Germany, beautifully situated near the left bank of the Neckar, and closely surrounded by vineyard slopes, 816 feet above the sea. With the exception of part of the lower and older town, it consists of spacious streets and squares lined with fine buildings. There are several high-class educational establishments, the polytechnic being the chief. Stuttgart is the chief center in South Germany for the book trade, connected with which are paper mills, type foundries, printing presses, and lithographic establishments. The other leading manufactures include dyes, chemicals, woolen and cotton goods, various fancy articles, jewelry, musical instruments, mathematical and scientific instruments, liquors, confectionery, and beer. E. from Stuttgart, and almost connected with it by the royal palace grounds, is the town of Cannstatt. Pop. (1900) 176,318.

Stuyvesant, Peter, a Dutch military governor; born in Holland in 1602; served in the West Indies, was director of the Dutch colony of Curacao, and lost a leg in an attack on the Spanish island of St. Martin. In 1647 he was made director-general of the New Netherlands, and reached New Amsterdam (now New York), in May of that year. Under his direction boundary lines were established between the Dutch and English possessions in America; but the British encroachments persisted till in August, 1664, an English fleet appeared in the bay and compelled the surrender of New Amsterdam, after which its name was changed to New York. Stuyvesant went to Holland in 1665, but afterward returned and spent the remainder of his life on his farm called the Bomerij, from which the name Bowery was given to a well-known thoroughfare in New York city. He died in August, 1682.

Style, a piece of iron or other material pointed at one end, used by the ancients for writing by scratching on wax tablets. The other end was made blunt and smooth, and was used to make erasures. Hence, a hard point for tracing, in manifold writing. A pointed tool used in graving. Also, the manner of writing with regard to language; the peculiar manner in which a person expresses his ideas or conceptions; the particular mode or form of expressing ideas in language which distinguishes one writer or speaker from another; the distinctive manner of writing characteristic of each author, or of each body of authors, allied as belonging to the same school, country, or epoch.

Also mode of presentation, especially in music or any of the fine arts; characteristic or peculiar mode of developing an idea or accomplishing a result; the peculiar manner in which an artist expresses his ideas; it is exhibited in his choice of forms and mode of treating them, and is determined in different ways, according to the changes of thought at different times and stages of its development. Besides the individual style, there is also a national style; as the Egyptian, the Grecian styles of architecture. Each of the various branches of art has its peculiar style; as, the epic, lyric, and dramatic styles of poetry; the historical and the landscape styles of painting, etc. In architecture, a particular character as

to the general artistic idea prevailing in a building; as, the Gothic or Norman styles.

Styx, in mythology, one of the rivers of Hades — the 10th part of the waters of Oceanus — flowing round it seven times with dark and sluggish stream, across which Charon ferries the shades of the departed.

Sub-deacon, the lowest step in holy orders in the Roman Catholic Church, the highest of the minor orders among the Greeks. In the Roman Catholic Church sub-deacons prepare the sacred vessels and the bread and wine for mass, pour the water into the chalice at the offertory, and sing the Epistle; in the Greek Church they prepare the sacred vessels, and guard the gates of the sanctuary. There are no sub-deacons in the Anglican Communion.

Submarine Battery, a vessel capable of being submerged and maintained at a given depth below the surface of the water, and provided with means for penetrating the hull of an enemy's ship below the water line, or of blowing her up — usually a torpedo arrangement, which may be detached from the battery and attached to the bottom of the ship.

Submarine Boat, a boat capable of being propelled under the water. The first was probably that constructed by Drebbel, a Dutchman, for James I., and Robert Fulton made an effort in the same direction in 1801. Among recent submarine boats the most noteworthy is the Holland submarine torpedo boat.

Submarine Cable, a wire, or combination of wires, protected by flexible, non-conducting waterproof material, designed to rest on the bottom of a body of water, and serve as a conductor for the currents transmitted by an electro-magnetic telegraphic apparatus.

In all there are now about 200,000 miles of submarine cables, enough to go about eight times around the earth. They have cost about $200,000,000, but their market value is considerably higher, as deep-sea cables are solid and profitable investments. Of the total mileage, the Eastern and its associated companies control practically half, or, to be precise, 99,262 nautical miles of cables, with 161 stations, and 11 cable steamers. There are about 1,700 submarine cables ranging from a quarter of a mile to 15,000 miles. Nearly all the short lines belong to governments, but though only about 420 cables belong to private companies, these include at present all the deep-sea cables and about 90 per cent. of the total length of cables in the world.

A SUBMARINE BOAT.

Submarine Forest, in geology, the remains of a forest beneath the present level of the sea. Such a forest exists along the N. shore of Fifeshire, Scotland, and beyond that area. It consists of a peat bed, with the roots, leaves, and branches of trees.

Submarine Mines, explosives placed under water in a harbor, or along the coast, to destroy the vessels of an enemy. Submarine mining originated with the Germans who used it with great effect during the Franco-Prussian War. The Spanish-American War demonstrated the inefficiency of torpedoes and torpedo boats against rapid-fire guns, but the submarine mines remained a constant source of

read to the battleships. The sea past of the United States, both E. nd W., and the harbors of New York, Boston, New Orleans, and San Fran- isco were well protected by them, nd their number, in some places, ould have proved dangerous to the erchant shipping, had it not been for odern appliances.

Substance, in philosophy, that hich is and abides as distinguished om accident, which has no existence f itself, and is essentially mutable. The idea, then, to which we give e name of substance, being nothing ut the supposed but unknown sup- ort of these qualities (accidents) we nd existing, which we imagine can- ot subsist without something to sup- ort them, we call that support sub- antia, which, according to the true nport of the word is in plain Eng- sh (something) standing under and pholding."

Sub-Treasury System, a sys- m established by the United States nder the Act of July 4, 1840, when or the first time, the National gov- rnment assumed charge of its own nds, and sub-treasuries were estab- shed at New York, Boston, Charles- n, St. Louis, Philadelphia, and New rleans. A new sub-treasury act, sub- antially the same as the first, be- ame law in August, 1846. The sys- m then established is still in force. he government acts as its own bank, eeping its funds in the vaults of the reasury and of the various sub-treas- ries; in addition, the government ay deposit its funds with certain of ie National banks designated as de- ositories, they giving security there- or in the shape of government bonds.

Subways, a term generally applied arched passages or small tunnels nder streets for the purpose of con- aining gas pipes, water pipes, and metimes sewer pipes, or at least rains for surface water. Some also ontain telegraph wires and pipes for ie transmission of compressed air. hey are made of sufficient size to ermit of workmen walking to and o in them to examine the pipes and execute repairs, they save the ne- ssity for breaking up streets to get the pipes for repairs, an operation hich not only obstructs the traffic, but prevents the roadways and foot- pavements from being kept in proper condition.

The name subway is also applied to underground tunnels of city railways, such as those in use in New York and Boston. The underground sys- tem of the New York Rapid Transit Subway was begun March 24, 1900, to be finished in four and a half years, at a cost of $35,000,000; local stations 23, express stations, 5; station ele- vators, 10; length of track, 610,000 feet.

Succession, law of succession. The law or rule according to which the succession to the property of de- ceased persons is regulated. In gen- eral this law obtains only in cases in which the deceased person has died intestate, or in which the power of bequeathing property by will is lim- ited by the legislature. In the United States each State has its own law of succession. Usually succession is by families.

Suchau, previous to the Taiping rebellion, one of the largest cities in China; on the Imperial canal, 80 miles W. N. W. of Shanghai, in the province of Kiangsu. It stands on numerous islands separated by canals, and since 1896 has been accessible as a treaty port. The city walls have a circuit of 10 miles. Suchau has for generations been a noted center of the silk manufacture and of the printing of cheap Chinese classics. It was captured by the Taipings but re- covered by "Chinese" Gordon in 1863, on which occasion the city with its many handsome buildings was al- most wholly destroyed. Pop. 500,000.

Sucker, or **Sucking Fish,** a name applied popularly to the Remora, to the lump-sucker, and also to the fishes belonging to the genus which is near- ly allied to the lumpsuckers. The best- known forms are Montague's sucker, and the common sucker or seasnail, which adheres to stones and other fixed objects by means of their united ventral fins. They are small fishes, three or four inches long.

Sucker State, a popular name for Illinois, whose inhabitants are pretty generally dubbed "suckers" by their fellow citizens of neighboring States. The following is the origin of the

epithet: A writer in the "Providence Journal" says: "The western prairies are full of the holes made by the crawfish, which burrows to reach the water beneath the soil. In the early days of the country's settlement travelers armed themselves with slender hollow reeds, which they thrust, when thirsty, into these natural reservoirs, and thus easily supplied their longings by sucking the water through the reed or pipe."

Sudan, the Arab name given to the vast extent of country in Central Africa which lies between the Sahara on the N., Abyssinia and the Red Sea on the E., the countries draining to the Kongo basin on the S., and Senegambia on the W. Its area is estimated at 2,000,000 square miles. The inhabitants comprise numerous nations of different races, chiefly the Negro, together with Arab colonists and traders. Western and Central Sudan are divided into a number of independent and semi-independent States: Bambarra, Gando, Sokoto, Adamawa, Bornu, Baghirmi, Wadai, and Kanem. These States have been absorbed into provinces formed by the European powers. French Sudan extends from Algeria and Tunis on the N. to Nigeria (British territory) on the S. and from the West coast "hinterlands" (French territory), to a line running from the extreme S. point of Tripoli to Lake Tchad. The boundary lines were fixed by the Anglo-French agreement of 1899. In the same year the administration of French Sudan was changed, the regions in the W. and S. W. being put under the control of the Governor-General of West Africa, while the regions in the N. and N. E. were made into two military departments. Pop. about 2,500,000.

The Egyptian or Eastern Sudan comprises Dongola, Khartum, Suakin, Senaar, Kordofan, Darfur, and the Equatorial Province, with Fazogli and Bahr-el-Chazal. The estimated area is about 950,000 square miles. Egyptian rule was first extended to the Eastern Sudan in the early part of the 19th century by Mohammed 'Ali, under whom Ibrahim Pasha carried it as far S. as Kordofan and Senaar. An Egyptian expedition under Sir Samuel Baker in 1870 led to the conquest of the equatorial regions on the Nile farther S. than the Sudan proper, of which General Gordon was appointed Governor-General in 1874. On the fall of Ismail Pasha of Egypt, Gordon was recalled, and hordes of Turks, Cirassians, and Bashi-Bazouks were let loose to plunder the Sudanese. Egyptian misrule then became intolerable, and in this crisis appeared Mohammed Ahmed of Dongola, who gave himself out to be the Mahdi, the long-expected redeemer of Islam.

The revolt of the Mahdi broke up the Egyptian Sudan into various districts. After the Mahdi's death the insurrection was continued by one of his lieutenants called the Kalifa. In 1897 the Anglo-Egyptian army commenced operations for the recovery of the lost provinces. In 1898 the territory was practically regained, and the last resistance disappeared when Osman Digna was captured Jan. 19, 1900. By the convention of Jan. 19, 1899, the Egyptian Sudan is administered by a governor-general appointed by Egypt with the assent of Great Britain. The receipts to be collected in the Sudan were estimated at $790,000, and the expenditures at $2,875,000, the balance to be made up by Egypt. In 1898, there were strained relations between the Egyptian and the French governments, owing to the presence in the Egyptian Sudan of a French force under Major Marchand. The difficulty was settled by Marchand's evacuation of Fashoda, and by the delimitation of the respective "spheres of influence" of the two governments, with a mutual agreement not to acquire territory or political influence beyond the designated boundary. Khartum is the capital of the Egyptian Sudan. Estimated pop. of the region, before the Mahdi's revolt, about 10,000.

Sue, Marie Joseph Eugene, a French novelist; born in Paris Dec. 10, 1804. He adopted his father's profession of medicine, became a surgeon in the army, and served in Spain in 1823. In 1825 he joined the naval service, and in the capacity of surgeon was present at the battle of Navarino in 1827. On his father's death in 1829, he inherited an immense fortune, and, having abandoned his profession, he devoted himself to

literary composition. His first work was a sea novel entitled "Kernock the Pirate." His most famous works are: "The Mysteries of Paris," and "The Wandering Jew." In 1850 he was elected to the Constituent Assembly, and sat as an advanced radical. After the coup d'etat by Napoleon III. in 1851 he left France and retired to Savoy. He died in Annecy, Savoy, July 3, 1857.

Suet, the solid fat deposited round the loins and kidneys of the ox or sheep, the latter being the more solid, and containing more stearin than beef fat, but less palmatin. Both contain a little olein. When rendered down it forms tallow. Chopped suet is used in cooking for making boiled puddings, and for various other purposes, as stuffing, etc.

Suetonius, Tranquillus, Caius, a Roman author; lived and wrote between A. D. 75 and 160. The date of his death is unknown. He was a voluminous writer. His works, in part enumerated by Suidas, consisted of grammatical treatises and works antiquarian, legal, moral, and biographical, most of which have been lost. His "Lives of the Twelve Cæsars," "Lives of Eminent Grammarians," and a portion of "Lives of Eminent Rhetorians," survive. On the first his reputation rests. It is pregnant with interest, replete with curious information and endless anecdote and scandal bearing on the imperial coterie — a perfect storehouse, in fact, of details of the profligacy and lust of the Cæsar family, set forth with all the sincerity, impartiality, and relish of an arch gossip. Yet withal there is no reason to doubt his veracity. As a writer his language is brief and precise, occasionally obscure, but without affectation.

Suevi, an appellation of various Germanic tribes in classic authors; used somewhat loosely, as we find it employed to designate peoples widely removed from each other. On six different occasions tribes probably Germanic, though possibly mixed with Celtic and Slavonic elements, appear in history under this name. (1) Cæsar mentions Suevi living on the E. bank of the Rhine, and possessing 100 villages. (2) Tacitus places them N. and S. of this, on both sides of the Upper and Middle Elbe. (3) In the 2d and 3d centuries they appear along with the Quadi and Marcomanni in Moravia and Bohemia. (4) In 406 Suevi cross the Rhine along with the Vandals and Alans, and break into Spain, settling more especially in Leon and Castile, whence they were driven by the Visigoths in 584. (5) In 420 another tribe called Suevi are spoken of in Upper Germany, who left their name to the modern Swabia. (6) In the 6th century we hear of Nordsuevi, with a village of Swevon on the Upper Elbe.

Suez Canal. In 1854 M. de Lesseps, a member of the French diplomatic service in Egypt, obtained from the pasha the concession of building a ship canal from Tyneh (near the ruins of ancient Pelusium) to Suez. In 1855 a new European commission was appointed, which reported that M. de Lessep's scheme was practicable. The result of the report was the formation of a joint-stock company, and the work was accordingly begun. The canal was to be dredged through Lake Menzaleh, which runs far into the land directly toward Suez, to be connected with Lake Temsah, the Bitter Lake, and other marshy swamps, and so with Suez. Only a third of the way required to be excavated through the sands and rocks of the desert. Work was begun in the end of 1860. On Nov. 16, 1869, the Suez canal was opened in form, with a procession of English and foreign steamers, in presence of the Khedive, the Empress of the French, the Emperor of Autria, the Crown Prince of Prussia, and others.

Suffrage, the right to vote for any purpose, but more especially the right of a person to vote in the election of his political representative. In the United States it is practically universal for all male citizens or naturalized persons of 21 years and upward.

Sufism, the pantheistic mysticism of the Mohammedan East, which strives for the highest illumination of the mind, the most perfect calmness of the soul, and the union of it with God by an ascetic life and the subjugation of the appetites. This pantheism, clothed in a mystico-religious garb,

has been professed since the 9th and 10th centuries by a sect which at present is gaining adherents continually among the more cultivated Mohammedans, particularly in Persia and India. The name is from sufi, a religious ascetic, an Eastern term applied to all members of religious monastic bodies leading an ascetic life. The Sufis were originally devout persons who, perplexed by the discord prevailing among the various systems of Mohammedan philosophy in the 2d century of the Hegira, found consolation in pious mysticism. Their teachings, though at first consonant with orthodox Mohammedanism, gradually led to a mode of thought totally irreconcilable with the Koran. About the beginning of the 10th century the Sufis divided into two branches, one of which followed Bostanie, who openly embraced pantheism, and the other Juneid, who sought to reconcile Sufism with Mohammedanism. Among eminent Persians poets belonging to the Sufis we may mention Hafiz, a distinguished Sun; Ferid-ed-din, and Jami. The celebrated philosopher and jurist, Alghazzali was also a Sufi.

Sugar, a sweet, crystallized substance manufactured from the expressed juice of various plants, especially from the sugar cane; also, any substance, more or less resembling sugar in any of its properties; as sugar of lead; figuratively, sweet, honeyed, or soothing words or flattery, used to disguise or hide something distasteful.

Cane sugar, called also saccharose, sucrose, and canose, is found in the juice of many grasses, in the sap of several trees, and in beet and several other roots. It appears to be the transition product between starch and invert sugar in all plants which yield the latter compounds. It is extracted most easily from sugar cane, but is also manufactured on a large scale from beet root.

Sugar Cane, a strong, cane-stemmed grass, from 8 to 12 feet high, producing a large, feathery plume of flowers. It is wild or cultivated in the Southern United States, India, China, the South Sea Islands, the West Indies, and South America, flourishing in the zone or belt from the equator to 35° or 40° N. and S. The land chosen for its cultivation is usually a good loam or light clay well manured. The leafy ends of the canes of the preceding season are cut off, or the whole cane is cut up, each piece being made to contain two nodes or joints. Twenty thousand of these are planted on each acre in January and February, the harvest begins early in December, and the cutting and crushing of the canes are carried on till January or February. There are several varieties of the sugar cane.

Sugar Maple, an American tree, sometimes 80 feet high, largely prevailing in New Brunswick, Nova Scotia, part of the United States, etc. It is tapped in the spring for its juice, which yields sugar.

Sugar Mill, a mill for expressing the juice from sugar canes. It has usually three rollers; two in the same horizontal plane, and the third over and between these. The canes are fed in between the upper and first horizontal rollers, where they receive their first squeeze, the juice running down into a trough at the base of the mill; they then travel onward, receiving a second squeeze between the top roller and the second horizontal roller.

Suicide, the act of designedly destroying one's own life. To constitute suicide, in a legal sense, the person must be of the years of discretion and of a sound mind.

The causes leading to suicide have been variously assigned, but the following based on actual reports per 100 cases may be regarded as reliable: In European countries the record shows that 19 per cent. was due to vice and crime; 18 per cent. to madness and delirium; 14 per cent. to loss of intellect; 11 per cent. to alcoholism; 6 per cent. to moral sufferings; 4 per cent. to family matters; 4 per cent. to poverty and want; 3 per cent. to consequence of crime; 2 per cent. to disease; and 19 per cent. to unknown causes. In the United States the causes run about the same, except that insanity leads the list. It is also shown that double the number of suicides are committed during the daytime, and that June is the favorite month, and the 11th the favorite day of the month.

Sulla, Lucius Cornelius, a Roman dictator; born in 138 B. C. He received a good education, but was notorious from his youth upward for his excessive dissipation and debauchery. He served with distinction under Marius in the Jugurthine (107 B. C.) and Cimbrian (104–102) wars, and in 93 was chosen prætor. For his services in the Social War (90–88) he was appointed consul (88 B. C.), and the province of Asia, with the conduct of the war against Mithridates, fell to his lot. Marius was also ambitious for this command and resorted to acts of violence to carry his point, by which Sulla was compelled to escape from Rome. But Sulla reëntered the city at the head of his army, drove Marius to Africa, and then sailed for Greece at the beginning of 87 B. C. He expelled the armies of Mithridates from Europe (86), crossed into Asia (84), and was everywhere victorious, gaining plenty of wealth for himself and his soldiers, and forcing Mithridates to conclude a peace. Marius had died in 86 B. C., after proscribing Sulla and confiscating his property, but the party of Marius was still strong. Sulla now hastened to Italy, and landed at Brundusium with 40,000 men, 83 B. C. He was joined by many of his friends who had been banished from Rome. He gained four battles over the Roman forces in person, and defeated a Samnite army under Telesinus. He entered the city victorious in 82, and immediately put to death between 6,000 and 7,000 prisoners of war in the circus. Rome and all the provinces of Italy were filled with the most revolting scenes of cruelty. After satisfying his vengeance by the murder or proscription of thousands he caused himself to be named dictator for an indefinite period (81 B. C.). He now ruled without restraint, repealed and made laws, abolished the tribuneship, and settled his veterans in various parts of Italy. In 79 B. C. he laid down his dictatorship, and retiring to Puteoli abandoned himself to all sorts of debauchery. He died in 78 B. C.

Sullivan, Sir Arthur Seymour, an English composer; born in London, England, May 13, 1842; became a member of the boy choir in the Chapel Royal at St. James's, and at the age of 13 published his first composition. In the following year he won the Mendelssohn scholarship at the Royal Academy of Music, and in 1858, while at Leipsic, he composed his "Feast of Roses" and the music to Shakespeare's "Tempest." Subsequently he produced numerous songs, operas, oratorios, etc. He was knighted in 1883 and made chevalier of the Legion of Honor of France in the same year. He died in London, Nov. 21, 1900.

Sullivan, James William, an American writer; born in Carlisle, Pa., March 9, 1848. He was author of: "Working People's Rights," "A Concept of Political Justice," "Direct Legislation Through the Initiative and Referendum"— this book started the referendum movement in the United States, etc.

Sullivan, John, an Americal military officer; born in Berwick, Me., Feb. 17, 1740. He was commissioned a major of militia in 1772; represented New Hampshire at the Continental Congress held in Philadelphia, Pa., in 1774; was appointed a Brigadier-General of the American army in 1775; and given command of the left wing of the forces then laying siege to Boston. In June, 1776, he was placed in command of the army on the Canadian boundary. On Aug. 29, 1778, he attacked the British at Butt's Hill, near Newport, R. I., and after a 12-hours' severe battle, in which about 6,000 men fought on each side, the Americans drove the British from the field at the point of the bayonet. Lafayette pronounced this engagement the best contested one of the whole war. He resigned from the army in 1780 owing to ill health, and was a second time a delegate to the Continental Congress. He later resumed the practice of law in New Hampshire; and was United States judge of that State from 1789 till his death, in Durham, N. H., Jan. 23, 1795.

Sullivan's Island, an island at the N. side of the entrance to Charleston harbor, S. C.; 6 miles from Charleston. It is 6 miles long, but very narrow, and is a favorite sea-bathing resort. On it is situated Fort Moul-

trie, a position of importance during the Civil War.

Sully, Alfred, an American military officer; born in Philadelphia, Pa., in 1821; was graduated at the United States Military Academy in 1841, and assigned to the 2d Infantry, with which he took part in the Seminole War; served in the war with Mexico in 1846–1847; and was then assigned to duty on recruiting service in the North. In 1861–1862 he served in Washington and in the latter year was made colonel of the 3d Minnesota Volunteers; won distinction in the battles of Fair Oaks and Malvern Hill; was promoted Brigadier-General of volunteers in October, 1862, and later participated in the battle of Chancellorsville. In 1863 he was given command of the Department of Dakota, and greatly distinguished himself in his campaigns against hostile Indians. At the close of the war he was brevetted Major-General of volunteers, and Brigadier-General, U. S. A., for gallantry during the war; and was promoted colonel of the 10th Infantry in 1872. He died in Fort Vancouver, Wash., April 17, 1879.

Sully, Maximilien de Bethune, Duc de, Marshal of France and first minister of Henry IV.; born in Bosny, France, Dec. 13, 1560; was educated in the Protestant (Calvinistic) faith. He distinguished himself at the battle of Ivri in 1590, where he was severely wounded, and was afterward of great assistance to the king in resisting the intrigues of the League. In 1597 he was appointed controller of finance, and by his excellent administration largely reduced taxation, and eventually paid off a state debt of 300,000,000 livres. He also received many other offices and dignities, and became adviser of the king in all his councils. His industry was unwearied, and he did all he could to encourage agriculture, which he regarded as the mainstay of the state. In 1606 the territory of Sully-sur-Loire was erected into a duchy in his favor. After the murder of Henry IV. (1611) he retired from court and resigned most of his charges. He now occupied himself chiefly with agriculture, and rarely took part in political affairs. He was created Marshal by Richelieu in 1634, and died in Villebon Castle, France, Dec. 22, 1641. He left memoirs which have been published in English.

Sully, Thomas, an American artist; born in Horncastle, Lincolnshire, England, in 1783; emigrated to the United States with his parents in 1792; studied painting in Charleston; established himself in Richmond, Va., as a portrait painter in 1803; removed afterward to New York; and in 1809 settled in Philadelphia where he afterward lived. His reputation as one of the leading American portrait painters is founded on numerous works, the best known of which are the full-length portraits of Dr. Benjamin Rush, Commodore Decatur, Thomas Jefferson, and Lafayette. The Boston Museum possesses his celebrated picture of "Washington Crossing the Delaware." He died in Philadelphia, Nov. 5, 1872.

Sulphates, salts of sulphuric acid. Sulphuric acid is dibasic, forming two classes of sulphates, viz., neutral sulphates, in which the two hydrogen atoms of the acid are replaced by metal, and acid sulphates, in which one hydrogen atom only is so replaced. Of the sulphates, some are found native; some are very soluble, some sparingly soluble, and some insoluble. The most important sulphates are: Sulphate of aluminum and potassium, or alum; sulphate of ammonium, employed for making carbonate of ammonia; sulphate of copper, or blue vitriol, much used as an escharotic in surgery, and also used in dyeing and for preparing certain green pigments; sulphate of iron, or green vitriol, used in making ink, and very extensively in dyeing and calico printing; it is also much used in medicine; sulphate of calcium, or gypsum; sulphate of magnesium, or Epsom salts; sulphate of manganese, used in calico printing; sulphate of mercury, used in the preparation of corrosive sublimate and of calomel; bisulphate of potash, much used as a flux in mineral analysis; sulphate of sodium, or Glauber's salts; sulphate of quinine, much used in medicine; sulphate of zinc or white vitriol, used in surgery, also in the preparation of drying oils for varnishes, and in the reserve or resist

pastes of the calico printer. Many double sulphates are known.

Sulphur. Sulphur, or brimstone, has been known and used from the earliest times. It is found native in mechanical combination with various earthy impurities in most volcanic districts, more particularly in Sicily and the countries bordering on the Mediterranean. The native sulphur of commerce is derived chiefly from Sicily, where it occurs in beds of blue clayey formation. It is found native in two forms — in transparent amber crystals, as virgin sulphur; or in opaque, lemon-yellow crystalline masses, as volcanic sulphur. It is found in combination with the different metals, forming metallic sulphides, in nearly every portion of the earth. Zinc blende, iron, and copper pyrites, galena, cinnabar, gray antimony, and realgar, are a few instances of the valuable ores containing sulphur. In its oxidized condition, as sulphuric acid, it is also very largely distributed over the mineral kingdom.

Sulphuric Acid, a very important acid which occurs in nature in large quantities, both in the vegetable and mineral kingdoms, in combination with the various bases, more particularly the alkalies, alkaline earths, and the oxides of iron, copper, lead, zinc, alumina, etc. Its mineral combinations are generally known as vitriols, a name which, in the case of the sulphates of iron, copper, and zinc, has been transferred to the manufactured products. Sulphuric acid is formed by the oxidation of sulphurous acid, or some other oxide of sulphur. In its perfectly anhydrous condition, it occurs as a white crystalline fibrous mass, somewhat resembling asbestos in appearance. It can be molded in the fingers like wax without charring the skin; it fumes in the air, and is very deliquescent, hissing violently when thrown into water; thereby becoming sulphuric acid. It chars wood, paper, sugar, and other similar substances, by abstracting water from them. It melts at 65° F., and boils at 110° F., forming a colorless vapor. It possesses no acid properties whatever, and is not regarded as such by the followers of Gerhardt, by whom it is called **sulphuric anhydride.**

When pure, sulphuric acid is a heavy, oily colorless, inodorous liquid, and having a sp. gr. of 1.842. It is intensely caustic, and chars almost all organic substances, by abstracting water from them. Its affinity for water is very great, doubling its weight by the absorption of vapor from the air, if left exposed in any open vessel for several days. It mixes with water in all proportions. It freezes at 29° F., and boils at 590° F., its vapor being colorless and very suffocating, forming dense fumes in moist air. When mixed with water, it evolves considerable heat. Sulphuric acid is the starting point of nearly every important chemical manufacture. Acetic, nitric, and hydrochloric acids are made by its means; and it will be only necessary to allude to the important part it plays in the manufacture of soda from common salt, to appreciate the saying of Liebig, "that the amount of sulphuric acid made in a country is a sure index of its wealth and prosperity." In the hands of the chemist it has numerous and important uses. Its salts, the sulphates, are among the most important chemical agents in the laboratory. In its concentrated form, it is in daily use by the scientific chemist to promote the crystallization of deliquescent substances in vacuo, from its intense avidity for water. The sulphates are a numerous and important class of salts. They are mostly composed of an equivalent of acid and an equivalent of the metallic oxide. They vary somewhat in the numbers of atoms of water of crystallization, some being anhydrous, others containing as many as 12 equivalents.

Sulphuric Ether (ethylic, vinic, or ordinary ether), a colorless transparent liquid, of a pleasant smell and a pungent taste, extremely exhilarating, and producing a degree of intoxication when its vapor is inhaled by the nostrils. It is produced by distilling a mixture of equal weights of sulphuric acid and alcohol and by various other means. It is employed in medicine as a stimulant and antispasmodic. Ether, by its spontaneous evaporation, produces a great degree of cold, and is used in the form of spray in minor surgical operations

for freezing the part, and thus rendering it insensible to pain.

Sulphurous Acid, an acid formed by the union of an equivalent of sulphur with two of oxygen in a variety of ways, the most familiar being its production during the combustion of sulphur in the open air or in oxygen. The gas produced is endowed with the properties of a weak acid, and is the sole product of the combustion, provided the air or oxygen be perfectly dry. It has a pungent, suffocating odor, and when in a concentrated form cannot be breathed with impunity. It is not inflammable, and extinguishes burning bodies. At ordinary temperatures, sulphurous acid is a gas; but it may be readily condensed into a liquid by a pressure of three atmospheres, or by a freezing mixture of ice and salt.

Sultan, in Arabic, signifies "mighty one, lord." It is the ordinary title of Mohammedan rulers. The ruler of Turkey assumes the title of Sultan-es-selatin, "Sultan of sultans." The title sultan is also applied to the sultan's daughters, and his mother, if living, is styled Sultan Valide.

Sulu Islands, a group in the Indian Archipelago, consisting of more than 150 islands, which stretch from the N. E. point of Borneo to the Philippine Islands; total estimated area, 1,600 square miles; pop. estimated at 200,000. Sulu, the chief island, is lofty, and lies near the center of the group. The islands are of volcanic origin, and produce all kinds of tropical plants and trees. They are well watered, and enjoy an immunity from the hurricanes which ravage the neighboring islands. The inhabitants are of Malay descent, and nearly all profess the Mohammedan religion. There is a considerable trade between Sulu and Singapore in beche-de-mer, pearl shells, birds'-nests, etc. The islands were ceded by Spain with the Philippines to the United States, Dec. 10, 1898. The Sultan receives a pension from the American government.

Sumac (Rhus), a genus of shrubs with pinnate leaves and small flowers. They all have a lactescent acrid juice, and most of them possess valuable tanning properties. More than 70 species are known. R. typhina is an American species with hairy branches, hence its common name of stag's-horn sumac. It produces small red berries, and is cultivated in European gardens for ornament. R. glabra, another American species, is also grown for ornament, and its berries and branches are used for dyeing purposes. R. venenata, commonly called dogwood or poison sumac, is a shrub of the American swamps. It grows from 12 to 20 feet high, and produces greenish-white flowers. It is extremely poisonous, in some cases giving rise to inflammation of the skin followed by a pustular eruption. R. radicans, often called poison ivy, is a climbing variety. It affects certain individuals in the same manner as the poison sumac, but it is less virulent. The leaves of several of these species are now extensively collected in America for tanning and other purposes. The celebrated Japan varnish is obtained from a species of Rhus with downy and velvety leaves. The varnish oozes from the tree when wounded, and grows thick and black when exposed to the air.

Sumatra, an island in the Indian Seas immediately under the equator; separated from the peninsula of Malacca by the Straits of Malacca and from Java by the Straits of Sunda; greatest length about 1,000 miles; breadth, about 240 miles; area, 161,612 square miles; pop. (1897) 3,209,037. Banca and other islands adjoin the coast. The W. side of the island is mountainous, with peaks ranging in height from 2,000 feet in the S. to 5,000 feet further N.; and culminating in Indrapura, a volcano 12,572 feet high. The E. side spreads out into interminable plains. There are several volcanoes in the island. Copper, tin, and iron are found in abundance and deposits of coal exist. The chief rivers are the Rokan, Musi, Jambi, and Indragiri, which all form extensive deltas at their mouths. Sumatra enjoys great equability of climate, but in many low-lying parts is unhealthy; rain falls almost incessantly in the S. Mangroves grow near the coast, and at higher elevations myrtles, palms, figs, and oaks of various species are met with. The camphor tree prevails in the N., and

among vegetable curiosities are the upas tree and the gigantic rafflesia. Pepper, rice, sugar, tobacco, indigo, cotton, coffee, are cultivated for export, and camphor, benzoin, catechu, gutta-percha and caoutchouc, teak, ebony, and sandalwood are also exported. The fauna includes the elephant, the tapir, the rhinoceros, the tiger, the orang-outang and other apes, some species of deer and antelope, and numerous birds and reptiles.

The island is for the most part under the authority of the Dutch, and their possessions are divided into six governments. Sumatra has a very mixed population consisting of Malays, Chinese, Arabs, and many native tribes. The Battas are a peculiar and interesting race approaching the Caucasian type. Writing has been known among them from a very early period and their ancient books are written in a brilliant ink on paper made of bark.

The tidal wave accompanying the volcanic eruption of Krakatoa in 1883 caused great destruction on the S. coast of Sumatra.

Summer, that season of the year when the sun shines most directly on any region; the warmest season of the year. N. of the equator it is commonly taken to include the months of June, July, and August; though some substitute May, June, and July. The former view conforms better to fact. July, which by this arrangement is midsummer month, is the hottest in the year, for though the maximum of heat is obtained on June 21, the longest day, the amount received for many subsequent days is greater than that lost by radiation, and the temperature continues to increase. Summer is the appropriate season for the hay harvest and for the ripening of the earlier fruits. Astronomically considered, summer begins in the Northern Hemisphere, when the sun enters the sign of Cancer about June 21, and continues till Sept. 23, during which time he passes through Cancer, Leo, and Virgo.

Summer Duck is a native of North America, and in the breeding season is distributed over the United States, migrating S. in winter. It is capable of domestication. Called also wood duck, from its habit of nesting in holes in trees.

Summons, in law, a writ commanding the sheriff, or other authorized officer, to notify a party to appear in court, to answer a complaint made against him, and in the same writ specify some day therein mentioned.

Sumner, Charles, an American statesman; born in Boston, Mass., Jan. 6, 1811; was educated at Harvard University. In 1834 he was called to the bar, and shortly afterward became reporter of the United States Circuit Court. In 1836 he published three volumes of Judge Story's decisions, subsequently known as "Sumner's Reports," and edited a periodical called the "American Jurist." He visited Europe in 1837, and returned to Boston in 1840 where he resumed his legal practice. Between 1844 and 1846 he edited and published "Vesey's Reports" in 20 volumes. In 1851 he was elected to the Senate of the United States and distinguished himself by his strong antipathy to slavery. In May, 1856, after delivering a speech vigorously attacking the slaveholders, he was violently assaulted by Preston S. Brooks, member from South Carolina. His injuries compelled him to absent himself from public duties for nearly four years. He was a supporter of Lincoln and Hamlin, and in 1861 he became chairman of the Senate Committee on Foreign Relations. He was an enemy to the policy of President Johnson and opposed the home and foreign policy of President Grant. After the latter's reëlection in 1872 Sumner seldom appeared in debate. He died in Washington, D. C., March 11, 1874.

Sumner, Charles Allen, an American lawyer; born in Great Barrington, Mass., Aug. 2, 1835; received an academic education; and was a member of Congress in 1883–1885. Afterward he was editor of several newspapers, including the San Francisco "Mirror," the Sacramento "Sentinel," the San Francisco "Herald," etc. Died 1903.

Sumner, Edwin Vose, an American military officer; born in Boston, Mass., Jan. 30, 1797. He was a captain in the Black Hawk war; served with distinction in the Mexican war

in 1846–1847, especially at the battles of Cerro Gordo and Molino del Rey; was made major in 1846; governor of New Mexico in 1851–1853; in 1855 was made colonel and was one of the escort of Abraham Lincoln from Springfield, Ill., to Washington, D. C., in February, 1861; in March, 1861, promoted Brigadier-General U. S. A. During the Civil War he commanded a corps at the battle of Fair Oaks, May 31–June 1, 1862; at Malvern Hill July 1, and at the battle of Antietam Sept. 17 of that year; he also commanded one of the three great divisions of Burnside's army at the battle of Fredericksburg, Dec. 13, 1862; was given command of the Department of the Missouri in 1863. He died in Syracuse, N. Y., March 21, 1863.

Sumner, George Watson, an American naval officer; born in Constantine, St. Joseph co., Mich., Dec. 31, 1841; was appointed to the navy in 1858 and attended the United States Naval Academy till 1861. In the Civil War he took part in the bombardment of Forts Jackson and St. Philip; commanded the "Massasoit" on the James river, and with the "Onondaga," forced the Confederate ironclad to relinquish the purpose of attacking Grant's transports and base of supplies at City Point, Va. After the war he served in various capacities, was commandant of the Naval Station, Port Royal, S. C., in 1899–1901; and in January, 1901, was appointed commandant of the Philadelphia Navy Yard and Station.

Sumner, Samuel Storrow, an American military officer; born in Pennsylvania, Feb. 6, 1842; was appointed to the army from New York in 1861; served with distinction during the Civil War, and against hostile Indians in the campaign of 1869. In May, 1898, he was appointed a Brigadier-General of volunteers and in the Spanish-American War, was assigned to duty in Cuba where he took part in the Santiago campaign. He was mustered out of the volunteer service in 1899, and ordered to England as military attache, but left there in 1900 to join the United States troops in China. Later he was sent to the Philippines, where he was placed in command of the 1st district of Southern Luzon. He was promoted Brigadier-General U. S. A., Feb. 4, 1901.

Sumner, William Graham, an American political economist; born in Paterson, N. J., Oct. 30, 1840; was graduated at Yale in 1863; studied at Geneva, Gottingen, and Oxford; was tutor at Yale in 1866–1869; in 1867 took orders in the Protestant Episcopal Church; was assistant at Calvary Church, New York, and rector of the Church of the Redeemer, Morristown, N. J.; appointed Professor of Political Economy and Social Science at Yale College in 1872.

Sumter, Thomas, an American military officer; born in Virginia in 1734. In the early part of the Revolutionary War he was lieutenant-colonel of a regiment of South Carolina riflemen, but after the capture of Charleston in 1780, he was made a Brigadier-General of light cavalry. In the spring of 1781 he again began active service and took a distinguished part in the battle of Eutaw Springs. The thanks of Congress were tendered him in 1791, and he was afterward sent to that body as a representative of South Carolina. In 1809 he was appointed United States minister to Brazil and two years later was elected United States Senator from his native State. At the close of his term he retired to private life, and died near Camden, S. C., June 1, 1832.

Sumter, Fort (named after Gen. Thomas Sumter, 1734–1832), an American fort associated with both the beginning and the end of the Civil War; built of brick, in the form of a truncated pentagon 38 feet high, on a shoal, partly artificial, in Charleston Harbor, 3½ miles from the city. On the withdrawal of South Carolina from the Union in December, 1860, Major Anderson, in command of the defenses of the harbor, abandoned the other forts, and occupied Fort Sumter, mounting 62 guns, with a garrison of some 80 men. The attack on the fort was opened by General Beauregard April 12, 1861, and it surrendered on the 14th; this event marked the beginning of the war. The Confederates strengthened it, and added 10 guns and 4 mortars. In April, 1863, an attack by a fleet of monitors failed.

n July batteries were erected on Morris Island, about 4,000 yards off, from which in a week 5,000 projectiles, weighing from 100 to 300 pounds, were hurled against the fort; at the end of that time it was silenced and in part demolished. Yet the garrison held on amid the ruins and in September beat off a naval attack; and in spite of a 60 days' bombardment in October–December, 1863, and for still longer in July and August, 1864, it was not till after the evacuation of Charleston itself, owing to the operations of General Sherman, that the garrison retired, and the United States flag was again raised April 14, 1865; an event soon followed by the evacuation of Richmond and the Confederate surrender.

Sun, the central orb of the solar system, that around which revolve the earth and other planets. The sun appears to be a perfect sphere, with a diameter of 866,900 miles; its mean density is about ¼, taking that of the earth as 1; its mean distance from the earth is taken as 93,000,000 miles. It rotates on its own axis; this axis of rotation being to the ecliptic at an angle of 82° 40′; and its rotation period is variously estimated at from 25 to 28 days. The mass of the sun is about 750 times that of the solar system combined and the center of gravity of the solar system lies somewhere in the sun, whatever may be the relative positions of the planets in their orbits. The dark spots on the sun discovered by Galileo have been shown to be hollows, and their depth has been estimated to be at from 3,000 to 10,000 miles. The spots are very changeable in their figure and dimensions, and vary in size from mere points to spaces of 50,000 miles or more in diameter. It is from observations of these spots that the sun's rotation on its axis has been calculated. The frequency of sun spots attains a maximum every 10½ years, the number of spots falling off during the interval to a minimum, from which it recovers gradually to the next maximum. This periodicity has been thought to be intimately connected with the meteorological phenomena observed on the earth, especially with the rainfall. Spots are called maculæ. Brighter portions of the sun are called faculæ, and the lesser markings are called mottlings. The sun is now generally believed to be of gaseous constitution, covered with a sort of luminous shell of cloud formed by the precipitation of the vapors which are cooled by external radiation. This dazzling shell is termed the photosphere. The spots are supposed to be cavities in this cloud-layer, caused by the unequal velocities of neighboring portions of the solar atmosphere. Zollner, who considers the body of the sun to be liquid, sees in them slags or

SUN SPOTS.

scoriæ floating on a molten surface, and surrounded by clouds. It is estimated that the sun's radiation would melt a shell of ice covering its own surface to about a depth of between 39 and 40 feet in one minute, but the temperature of the surface has not yet been ascertained. It is evident, however, that the temperature and radiation have remained constant for a long period. The photosphere is overlaid by an atmosphere which is shown by the spectroscope to contain

nearly all materials which enter into the composition of the sun. And in the lines of the spectrum of sunlight is found proof of the existence of the solar atmosphere of the following substances: Iron, titanium, calcium, manganese, nickel, cobalt, chromium, barium, sodium, magnesium, copper, hydrogen, zinc, sulphur, cerium, strontium, and potassium. In 1706 Captain Stannyan observed a blood-red streak just before the limb of the sun appeared after a total eclipse, and such appearances were subsequently observed, being first scientifically described in 1842 under the names of flames, protuberances, or prominences. In 1868 the spectroscope showed that these appearances were due to enormous masses of glowing hydrogen gas floating above the sun, similarly to clouds in our atmosphere. The region outside of the photosphere in which these colored prominences are observed has been called the chromosphere, which has an average depth of from 3,000 to 8,000 miles. The incandescent hydrogen clouds stretch out beyond this to altitudes of 20,000 to 1,000,000 miles, and jets of chromospheric hydrogen have been observed to reach a height of 200,000 miles in 20 minutes and disappear altogether within half an hour.

Outside the chromosphere, extending very far out from the sun, is the corona, an aurora of light observed during total eclipses, and which is now the chief object to be observed by eclipse expeditions. This phenomenon has been shown to be connected with the existence of what is called the "coronal atmosphere," but the nature of this atmosphere is as yet undetermined. The amount of light sent forth by the sun is not exactly measurable, but the amount of heat has been pretty accurately computed, and it is equivalent in mechanical effect to the action of 7,000 horse-power on every square foot of the solar surface, to the combustion of every square foot of upwards of 13½ cwts. of coal per hour.

One of the largest spots that has appeared on the sun in recent years was discovered in October, 1903, by John A. Brashear, chancellor of the Western University of Pennsylvania. Its area is so great that it can be seen by the naked eye if smoked glass is used.

"We call the comparatively dark areas 'spots,'" said Professor Brashear, "but some of them have many times the area of the earth. In square miles this newly discovered spot is 12 times the area of the earth. The spots on the sun indicate great solar storms. The present spot is probably the largest that has been seen for many years."

Of the effect of the sun spots on the earth Professor C. A. Young says: "While it at all unlikely that investigation will establish some real influence of sun spots upon our terrestrial meteorology and determining its laws, it is practically certain that this influence is extremely slight and so masked and veiled by other influences more powerful that it is extremely difficult to bring to light."

Sun, Eclipses of the, caused by the moon coming between the earth and the sun, may be either partial, total, or annular. In a partial eclipse the observer is situated in the penumbra of the moon's shadow, and only a part of the sun's light is cut off on one side. In a total eclipse the observer is in the umbra of the moon's shadow, and all the light of the sun is cut off except that from the prominences and corona surrounding the sun. In an annular eclipse the disk of the moon is wholly projected on that of the sun, but is not large enough to cover it completely, so that a ring of sunlight is left all round the moon. At present the only scientific importance of partial and annular eclipses is the use that may be made of them for determining the relative positions of the sun and moon, and thus correcting the elements of the terrestrial and lunar orbits. But the fleeting minutes of every total eclipse are now utilized so far as possible to study the sun's surroundings, especially the mysterious corona, which is so faint that it is only visible when the bright light of the photosphere is cut off.

Sun Bear, a sub-genus, comprising bears found in India and the Eastern Archipelago. The Thibetan sun bear is a black species with a white patch on the breast. The Bornean sun bear has an orange-colored patch. All the sun bears are slenderly made, and their

fur is not so heavy and thick as that of the other bears.

Sun Bird, divided by Capt. G. E. Shelley into two sub-families, the former containing the sun birds proper, and the latter the long-tailed sun birds. They are found over the whole of Africa, ranging through Palestine to India, thence through the Indian and Malayan Islands to Northern Australia, where a single species inhabits Cape York peninsula and Northern Queensland. They are small birds, of brilliant and metallic plumage, with a striking external resemblance to humming birds, with which they are not infrequently confounded.

Sunday-School, according to Schaff, "an assembly of persons on the Lord's day for the study of the Bible, moral and religious instruction, and the worship of the true God. It is a method of training the young and ignorant in the duties we owe to God and to our neighbor."

Modern Sunday-schools date from 1780 or 1781, when Robert Raikes, of Gloucester, England, began to collect a few children from the streets of that city on Sundays, and paid teachers to instruct them in religious knowledge. The improvement in the conduct and morals of the children was so marked that, when Raikes published an account of his success, his example was followed in several other places, and in 1785 a society was formed for the establishment and maintenance of Sunday-schools in all parts of the kingdom, a large sum being expended in the payment of teachers. In 1803 the Sunday-School Union was formed to secure continuous instruction by unpaid teachers, and to publish books, tracts, and other matter, for the benefit of the cause.

The first Sunday-schools united secular with religious instruction, as did those of Borromeo and La Salle; but the spread of elementary education has to a large extent removed the necessity of teaching reading and writing on Sundays. The Society of Friends has, however, retained the practice in its large Sunday-morning schools, with great benefit as regards influence over the working classes above the age of childhood, and in some of the Wesleyan Sunday-schools, classes for elementary instruction are held early in the morning. Sunday-schools were introduced into Scotland, Ireland, and America in the years immediately following their establishment in England. In later times Sunday-schools have rapidly increased in connection with all Protestant Churches throughout the world.

Sunderland, a seaport and municipal and parliamentary borough of England, at the mouth of the Wear, county of Durham, 13 miles N. E. of Durham, and 12 miles S. E. of Newcastle. It is the largest town of Durham, and includes nearly the whole of three parishes — Sunderland, Bishopwearmouth, and Monkwearmouth. The town is for the most part new and well built. The harbor with its docks covers 78 acres, and its entrance is formed by two stone piers with lighthouses. The staple trade interests of the place are shipping, the coal trade, and ship building, and there are also large factories for the making of marine engines, iron work, bottles, glass, earthenware, rope, etc. Coal is the chief export; the imports are chefly timber and grain, with various raw materials and provisions, from the Baltic ports and Holland. Pop. (1901) 146,828.

Sunderland, Jabez Thomas, an American clergyman; born in Yorkshire, England, Feb. 11, 1842; was graduated at the University of Chicago in 1867 and at the Union Baptist Theological Seminary in 1870; was ordained in the Unitarian Church; and held pastorates in Milwaukee, Wis., Chicago, Ann Arbor, Mich., London, England, Toronto, Can., and other cities. In 1866–1895 he was editor of the "Unitarian Monthly."

Sunderland, Le Roy, an American author; born in Exeter, R. I. May 18, 1802; was ordained a Methodist preacher in 1823, and soon became an orator of marked eloquence, especially in the temperance and anti-slavery movements. In October, 1834, he was chairman of the meeting in New York city at which the first Methodist anti-slavery society was formed, and afterward was a prominent delegate to several anti-slavery conventions. Later he turned against Christianity and opposed it for many years. He died in Quincy, Mass., May 15, 1885.

Sunfish, called also opah and kingfish. They are small fishes, about six inches long, and are not used for food.

Sunflower, a genus of coarse, tall, herbaceous plants, with large rough leaves and yellow flowers; natives of America. One, an introduction from Peru, which has long been grown as a showy and large-flowered annual in gardens, has recently been found to possess high economic value. In Germany, Russia, India, and other countries it is now grown on a large scale. The seed-like nutlets in a natural state are excellent food for poultry and pigs; roasted they are said to be a good substitute for coffee; crushed and pressed, they yield a limpid bland oil second in value only to olive oil, either for household purposes or as a lubricator for the delicate machinery of textile fabrics, while the residuum can be used as an oil cake to fatten cattle; the stalks furnish a good fibre; the blossoms yield a brilliant lasting yellow dye, and the leaves serve as manure.

Sunnites, the so-called orthodox Mohammedans, in contradistinction to the Shiites or heterodox Mohammedans. The form by far the larger of the two divisions, embracing the Mohammedans of Egypt and the rest of Africa, Syria, Turkey in Europe and Asia, Arabia, etc. They chiefly differ from the Shiites in receiving the Sunna (a collection of traditions relating to Mohammedanism) as of equal importance with the Koran, while the Shiites reject it absolutely. There are several diversities in the copies of the Sunna, and the Sunnites are subdivided, on account of some minute differences of custom and law, into four minor sects. The Persians are the principal Shiites.

Sunshine Society. The Sunshine Society had its origin in 1896 in the office and among the workers of a New York newspaper. Its object was and is to incite the members to the performance of kind and helpful deeds, and thus bring the sunshine of happiness into the greatest number of hearts and homes. Did you ever notice how the face of a little child lights up if you smile at it as you pass on the street? That smile is a ray of sunshine for the little one. It costs you nothing and brightens the path for the toddling feet. And so it is through life. There are many kind and helpful deeds that bring sunshine and happiness to others which really require no effort on one's own part — probably less effort than the gloomy look, the acid word, the disfiguring frown. The Sunshine Society, in short, aims to spread sunshine. Any worthy person can become a member by helping to carry on the work, and the only fee is any act or suggestion that will carry sunshine where it is needed. The annual meeting is held on the third Thursday in May in the Waldorf Astoria, New York, and the official publication is the "Sunshine Bulletin," edited by Mrs. Cynthia Westover Alden, while the international medium is the Ladies' Home Journal, of which Mr. Edward Bok is editor. The Sunshine Society, from a small beginning has spread to both hemispheres, and its success has more than fulfilled the hopes of its founder and President General, Mrs. Alden.

Sunstroke, a very fatal affection of the nervous system, which is very common in India and tropical countries, and also in more favored regions in extremely hot weather. The symptoms of the disease are liable to be greatly modified in different cases. In the cerebro-spinal, the commoner form, the symptoms usually come on gradually; nausea and giddiness may be present at first; but the most striking feature of the disease is either wild delirium or coma, with a pungently hot skin and extremely high temperature — 106° F. or upward. Even those who recover from this form of the disease are apt to suffer for a long period, or it may be permanently, from severe headache, epilepsy, enfeebled mental power, or other nervous disorders. Intermediate varieties are also met with, forming links between these two extremes. The mortality from sunstroke is about 50 per cent. of those affected. In the cases that terminate favorably a gradual remission of the symptoms takes place; and when the skin becomes cool and moist, and sleep has been procured (phenomena which usually occur within 36 hours of the attack), the patient may be regarded as out of danger.

Sun Worship, a form of nature vorship, widely, though by no means ıniversally diffused at the present day ımong races of low culture. The sun vould naturally be chosen as a god ›y agricultural and pastoral peoples, vhile to races living by the chase the ummer heat would not be so advan- ageous. D'Orbigny suggests that the un has been worshiped only by races iving in temperate climates, where its eat is cheering and vivifying, and hat this cultus is practically unknown vithin the tropics, where the solar eat is oppressive. If not entirely rue, this theory contains consider- ble truth. Sun worship is still wide- y spread among the native races of Central America, and probably found ts highest form of development in Peru, where the sun was held to be t once the ancestor and founder of ıe dynasty of the Incas, who reigned s his representative, and made sun vorship the great State religion.

Super, Charles William, an ımerican educator; born in Potts- ille, Pa., Sept. 12, 1842; was gradu- ted at Dickinson College in 1866 and tudied in Tubingen, Germany, in 869–1871. He was Professor of anguages at the Cincinnati Wes- yan College in 1872–1878; and sub- equently became Professor of Greek t the Ohio University and afterward s president.

Super, Ovando Byron, an Amer- an educator; born near Newport, a., March 2, 1848; was graduated t Dickinson College in 1873; was rofessor of Languages at the Uni- ersity of Denver in 1880–1884; and eld the chair of modern languages t Dickinson College in 1894–1900. In ıe latter year he was made Pro- ssor of Romance Languages.

Superior, Lake, the extreme W. ıd most extensive of the great lakes f the St. Lawrence basin, in North merica, being the largest existing ›dy of fresh water. Its length, E. W., is about 360 miles, with a mean readth of about 80 miles, so that its rea may be taken at about 28,600 uare miles. The mean depth is timated at 900 feet, and the height its surface at 640 feet above e Atlantic. It receives upward of rivers, but none is of much im- ›rtance except the St. Louis which enters at its S. W. extremity, and the Riviere au Grand Portage. Dur- ing the melting of the snow, these and the other rivers sweep into the lake vast quantities of sand, bowlder stones, and drift timber. It discharges itself at its E. extremity into Lakes Huron and Michigan, by the river and falls of St. Mary. This lake em- bosoms many large and well-wooded islands, the chief of which is Isle Royal. Toward each extremity the lake contracts in width, and at the lower end terminates in a bay which falls into the outlet, the St. Mary's river, at the two opposite headlands of Gros Cape on the N. and Point Iroquois on the S. Thence to the mouth of the St. Mary's at Lake Hu- ron is about 60 miles. The navigation of this river is interrupted 20 miles below its source at the Falls of St. Mary, or, as the place is commonly called, Sault Ste. Marie. Here the river descends in a succession of rap- ids extending ¾ of a mile, from 18 to 21 feet, the fall varying with the stage of the water in Lake Superior.

A ship canal has been constructed past the falls by the United States government, so that now the lake is accessible to vessels from the Atlantic Ocean. The water of Lake Superior, remarkable for its coldness, purity, and transparency, is inhabited by many kinds of fish, among which are the delicious white fish and the gray trout.

Suppuration, a morbid process which gives rise to the formation of pus, one of the destructive termina- tions of the inflammatory action. Sup- puration in the interior of the body usually terminates in the formation of an abscess; but in some cases the matter is diffused through the inter- stices of the part, and is termed dif- fuse inflammation.

Supremacy, Papal, the authority, partly spiritual and partly temporal, which the Pope, as Bishop of Rome and successor of St. Peter, claims to exercise over the clergy, and, through them, over the laity, of the whole world. The development of this su- premacy dates from the time when Christianity became the State reli- gion of the Roman empire under Con- stantine. Its influence was great in

England under the Norman kings, and reached its highest point in the reign of John (1199–1216), from which period it began to decline, and received its death blow from the Act of Supremacy, in the reign of Henry VIII.

Supremacy, Royal, the supremacy in the Church of England, as by law established, of the temporal power in all causes purely temporal, and in the temporal accidents of spiritual things. By an act of Henry VIII. the king was declared to be the "only supreme Head on earth of the Church of England," though it was expressly declared that he did not "pretend to take any power from the successors of the apostles that was given them by God." In the same year (1535) Fisher, Bishop of Rochester, and Sir Thomas More were beheaded for denying the royal claim. On the accession of Elizabeth the title was kept in the background; but the supremacy of the sovereign in all causes, as well ecclesiastical as civil, was asserted. The royal supremacy was one of the main causes of the civil war in the 17th century; it received a check at the revolution of 1688 which enforced toleration of Nonconformity, but in the latter half of the 19th century more than one clergyman was committed to prison for disobeying the ruling of the law courts in ecclesiastical matters.

Supreme Court of the United States. In the formation of the Constitution of the United States it was intended that the three general departments of the government should be of correlative rank and influence. And the decisions of the Supreme Court, especially those rendered since the Civil War, in the construction of the constitutional amendments which were made as a result of that war, have been of such fundamental and far reaching consequences that the value and importance of this tribunal in the United States system of government have been made more strikingly conspicuous than ever before. Its judgments, for example, in regard to civil rights, interstate commerce, prohibition liquor laws, the Mormon question, the right of Congress to authorize the use of paper money in time of peace, the legislation of Congress in regard to the Southern States by so-called "force-bills," the relations of the States to the federal government, etc., have been of the highest importance, and their influence in the future will be almost incalculable. The Supreme Court, at its first session in 1790, consisted of a chief justice and five associates. By successive acts of Congress the number of associate justices was increased to six in 1807, to eight in 1837, and the statute now in force, passed in 1869, fixes the number at eight. The retirement of supreme justices at the age of 70 is not compulsory, but a mere personal privilege. This provision was originally enacted April 10, 1869. The United States Constitution expressly provides that the judges "shall hold their offices during good behavior," so that if they do not voluntarily take advantage of the foregoing provision and are not removed, they are entitled to exercise the duties of their office till death.

The Supreme Court is the judicial court of last resort in the Federal system of courts. The chief justice has a salary of $10,500, and the associate justices receive $10,000 each, and their compensation cannot be diminished during their continuance in office. The sessions are held in Washington, D. C., and any six justices constitute a quorum. Each judge of the court, moreover, must, at least once in every two years, attend a term in one of the nine circuit courts in those parts of the country where those courts are held. The judicial power of the Supreme Court and of the inferior federal courts extends to all cases in law and equity arising under the Constitution, the laws of the United States, and treaties made under their authority; to all cases affecting ambassadors, other public ministers, and consuls; to all cases of admiralty and maritime jurisdiction; to controversies to which the United States is a party, and to controversies between two or more States or between citizens of different States, etc.; but not to suits against one of the States by citizens of another State or by citizens or subjects of any foreign State. The Supreme Court has original jurisdiction in cases affecting ambassadors, public ministers, and consuls, and when a State is a party;

but its chief jurisdiction is appellate. Thus it hears appeals from the circuit courts and from certain district courts having circuit court powers; in civil actions; where the matter in dispute exceeds $5,000, or in equity and maritime cases, $2,000. But there are some cases, as, for example, in regard to patents and copyrights, revenue laws, and civil rights, where an appeal is allowed without regard to the value in dispute. Moreover, if decisions in the highest courts of the various States are in conflict with the Constitution, treaties, or laws of the United States, they may be appealed to the Supreme Court. No appeals from Territorial courts, from the Court of Claims, etc., are heard in this court.

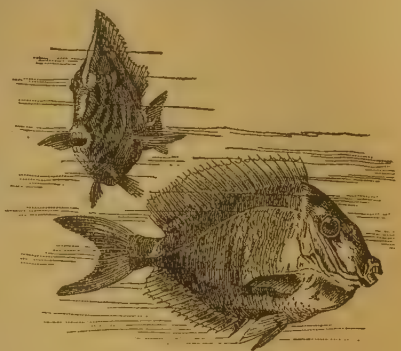
Surety, in law, one who is bound with and for another who is primarily liable, and who is called the principal; one who enters into a bond or recognizance to answer for his payment of a debt, or for the performance of some act, and who, in case of the failure of the principal, is liable to pay the debt and damages; a bondsman, a bail.

Surface Grub, a name applied to the larva or caterpillar of the great yellow underwing moth, attaining a length of an inch and a half, and of a pale-green color tinted with brown and spotted with black. The larva is destructive to vegetables. It appears commonly in hayfields in spring and summer. The moth itself is of a pale tawny color on the upper wings, and has the hind wings of an orange hue.

Surf Duck, or **Surf Scoter,** a species of duck, about the size of a mallard, frequent on the coasts of Labrador, Hudson Bay, and other parts of North America.

Surgeon, one who practises surgery; in a more limited sense, one who cures diseases or injuries of the body by operating manually upon the patient. In a more general sense, one whose occupation is to treat diseases or injuries by medical appliances, whether internal or external.

In ichthyology, a popular name for any species of the genus Acanthurus, from the sharp, erectile, lancet-shaped spine with which each side of the tail is armed. In the early stages of their growth these fish are so different from the fully-developed individuals, that for some time the young fish were placed in a separate genus.



SURGEON FISH.

Surgeon-general, in the United States army, the chief of the medical department. In the British army, a surgeon ranking next below the chief of the medical department.

Surmullet, a name of fishes, allied to the perches, and often called red mullets. They have two dorsal fins with a wide interval between them, the first being spinous, and two long barbels hanging from the lower jaw. The common red mullet of the Mediterranean is about 12 inches long, esteemed very delicious food, and was much prized by the Romans.

Surplice, the outer garment of an officiating priest, deacon, or chorister in the Church of England and the Roman Catholic Church, worn over their other dress during the performance of religious services. It is a loose, flowing vestment of white linen, generally reaching almost to the feet, with broad, full sleeves. It differs from the alb in being fuller, and in having no girdle, nor embroidery at the foot.

Surplus, The, the money which annually remains in the Treasury of the United States after the officers of the treasury department have collected the taxes laid on the people by the laws of Congress and have paid all the expenses and obligations of the government, except principal of the

interest-bearing debt. The disposition of this surplus has always been an important question, especially when there was no public debt outstanding at the time, or when such debt had not matured, and was, therefore, not redeemable. In 1835 the debt of the United States was $37,733, but the obligations had not been presented for payment. The surplus accumulated and in 1836 amounted to over $40,000,000. It was decided by Congress to apportion this out to those States who would authorize their treasurers to receive the amounts and agree to refund them when demanded. The sum of $5,000,000 was reserved by the government, and the remainder, $37,468,859, was to be paid in four installments. The first three were paid to all but the few States that had refused to accept it on the conditions proposed. The fourth installment was not paid on account of the financial depression of 1837. The return of these loans to the States has never been demanded by the general government.

Another large surplus accumulated in 1852, which was used in the payment of government obligations. The outbreak of the Civil War prevented any surplus for some years. During a period of 26 years, the surplus was smallest in 1874, being $2,344,882.30, and greatest in 1882, being $145,543,810.71. In 1887 it amounted to $103,471,097.69; in 1892 to $26,838,541; and in 1901 to $77,717,984.38.

Surrey, Henry Howard, Earl of, an English poet. He succeeded to the courtesy title of Earl of Surrey when his father became 2d Duke of Norfolk in 1524. The Howards held an eminent position at the court of Henry VIII., and Surrey's cousin, Catherine Howard, became the king's fifth wife. Surrey was one of the leaders of the early poetic movement under Henry VIII. Most of his poems were translations or adaptations of Italian originals. His translations of the second and fourth books of the Æneid are the first attempt at blank verse in the English language. Shortly before Henry's death Surrey and his father were suspected of aiming at the throne, and were arrested and lodged in the Tower, and Surrey was tried, condemned, and executed on Tower Hill, Jan. 19, 1547.

Surveying, the act or art of determining the boundaries, form, area, position, contour, etc., of any portion of the earth's surface, tract of country, coast, etc., by means of measurements taken on the spot; the art of determining the form, area, surface, contour, etc., of any portion of the earth's surface, and delineating it accurately on a map or plan. Land surveying is the art of applying the principles of geometry and trigonometry to the measurement of land. Geodesic surveying comprises all the operations of surveying carried on under the supposition that the earth is spheroidal. It embraces marine surveying.

Marine or hydrographical surveying ascertains the forms of coast lines, harbors, etc., and of objects on the shore, the entrances to harbors, channels, their depth, width, etc., the position of shoals, the depth of water thereon; and it embraces all the operations necessary to a complete determination of the contour of the bottom of a harbor or other sheet of water. Mining surveying may be either for the purpose of determining the situation and position of the shafts, galleries, and other underground excavations of a mine already in existence; or it may be for determining the proper positions for the shafts, galleries, etc., of a mine not yet opened. Railway surveying is a comprehensive term, embracing surveys intended to ascertain the best line of communication between two given points; it also includes all surveys for the construction of aqueducts for the supply of water to towns, etc. Topographical surveying embraces all the operations incident to finding the contour of a portion of the earth's surface, and the various methods of representing it upon a plane surface.

Susa, one of the capitals of ancient Persia; was situated on the Choaspes, and has now been identified with the extensive ruins on the left bank of the Kerkha, about 250 miles S. E. of Bagdad. It had a circumference of 120 stadia, and like Babylon was built of burnt bricks cemented with asphalt. It was without walls, but its citadel, containing the treasury and mausoleum of the Persian kings, was strongly fortified. After Alexander and his successors had fixed

their court at Babylon Susa declined in importance, though when besieged by Antigonus in 315 B. C. it was still one of the chief cities of Persia, and even as late as the middle of the 7th century A. D. it offered under Hormuzan an obstinate resistance to the Saracens; but by the 13th century it had become a heap of ruins.

Suspension, in English and Roman canon law, a censure inflicted on a clerk or priest in orders, for remedial purposes, the effect of which is to take away from him, for a fixed time, or till he repents and makes satisfaction, the exercise of his sacred functions in his office or benefice. In rhetoric, a keeping of the hearer in doubt and in attentive expectation of what is to follow, or what is to be the inference or conclusion from the arguments or observations. Pleas in suspension, in law, those pleas which show some matter of temporary incapacity to proceed with the action or suit. Points of suspension, in mechanics, the points, as in the axis of a beam or balance, at which the weights act or from which they are suspended. Suspension of arms, a short truce or cessation of operations agreed on by the commanders of the opposing forces, as for the burying of the dead, making proposals for surrender, peace, etc.

Suspension Bridge, a bridge sustained by flexible supports secured at each extremity. The points of support are the tops of strong pillars or small towers, erected for the purpose at each extremity of the bridge. Over these pillars the chains pass, and are attached behind them to rocks or massive frames of iron firmly secured underground. These masses of masonry are named anchorages. The flooring is connected with the chains by means of strong, upright iron rods.

Suspension Railway, a railway in which the carriage is suspended from an elevated track, one carriage on each side of a single track, so as to balance, or suspended between two tracks. There is an elevated single-track railway in Algeria, where 60 miles of suspension railway are at work, employed chiefly in carrying esparto.

Sutro, Adolph Heindrich Joseph, an American mining engineer; born in Aix-la-Chapelle, Prussia, April 29, 1830; came to the United States in 1850 and settled in San Francisco, Cal. There he engaged in business till 1860, when he conceived the plan of the great "Sutro tunnel," as a means of developing the Comstock mine in Nevada. He interested capitalists in the project and work was begun on the tunnel in 1869. His contract with the mine-owners called for $2.00 royalty on every ton of ore taken from the mines, and when the work was completed in 1879 he was paid about $15,000. He sold out his interest in the tunnel; went to San Francisco, invested in real estate, and soon became one of the wealthiest men on the Pacific slope. He was a donor of large sums of money to public institutions; founder of the Sutro Library, of San Francisco and mayor of that city in 1894. After his death there, Aug. 8, 1898, his will, in which he bequeathed nearly his whole fortune to the city, was contested and broken.

Sutro, Florence Clinton, an American musician; born in England; was graduated at the Grand Conservatory of Music in New York with the decree of Mus. D., being the first woman in the United States to receive that degree, and at the Law School of the University of New York. She was a member of numerous literary, musical, and social societies; honorary president of the Grand Conservatory Alumnæ; president of the Hospital for Crippled Children, and prominent as a writer for the advancement of women as composers and musicians. She founded the National Federation of Musical Clubs and Societies in 1898.

Sutton, Rhoades Stansbury, an American physician; born in Indiana, Pa., July 8, 1841; was graduated at Washington and Jefferson College in 1862, and at the Medical Department of the University of Pennsylvania in 1865. He was major of volunteers and surgeon in the army during the Spanish-American War. His publications include many contributions on surgery and medicine to technical periodicals.

Suture, in ordinary language, the act of sewing; the line along which

two things are joined, united, or sewed together, so as to form a seam, or something resembling a seam. Technically, in anatomy, the immovable junction of two parts by their margins; as, the sutures of the skull, i. e., the lines of junction of the bones of which the skull is composed. Various types of suture exist, as the serrated or dentated suture, the squamous or scaly suture, and the harmonic suture or harmonia. Arranged according to their situation, there are coronal, frontal, fronto-parietal, occipito-parietal and many other sutures.

Suzerain, in feudalism, a lord paramount; either the king, as original holder of the realm, or his immediate vassals, as grantors in turn to subvassals.

Svastika, a religious symbol used by early races of Aryan stock from Scandinavia to Persia and India. It consists of a Greek cross, either enclosed in a circle the circumference of which passes through its extremities or with its arms bent back, and was intended to represent the sun, being found invariably associated with the worship of Aryan sun gods (Apollo, Odin). Similar devices occur in the monumental remains of the ancient Mexicans and Peruvians, and on objects exhumed from the prehistoric burial mounds of the United States.

Swallow, in ornithology, any one of the numerous passerine birds. In the United States the best known species are the barn swallow; the cliff, eaves, or chimney swallow; the white bellied or tree swallow, and the bank swallow. The species usually described by naturalists as the type of the family is Hirundo rustica, a well-known European visitor, whose arrival from Africa (usually about the middle of April) is eagerly looked for as a sign of approaching summer. Swallows usually arrive in pairs — a male and a female — though several pairs often form a small flight; but if a single bird is seen to arrive, there is a strong presumption that it has lost its mate. They return with unfailing regularity to their old haunts, and in May commence building their nests, which are in shape somewhat like a flattened cup, divided perpendicularly; they are made of clay, mud, and straw, lined with horsehair or feathers, and the eggs, which are from four to six in number, are white, spotted with a purply-red.

SWALLOWS.

Swamp Angel, The, an 8-inch Parrott gun, so named by the Federal soldiers. It was mounted on a battery constructed on piles driven into the swamp near Charleston, S. C., and was used in the siege of that city. It burst Aug. 22, 1863, and was sent with a lot of old metal to Trenton, N. J., to be melted up. By some means the gun was recognized, was rescued from its impending fate and set on a granite base on the corner of Perry and Clinton streets in the city of Trenton.

Swamp Deer, is about four feet in height, rich light yellow in color, and congregates in large herds in moist situations. The antlers are large, with a long beam which branches into an anterior continuation of the main portion, and a smaller posterior tyne which is bifurcated.

Swamp Hickory, a North American tree with small ovate fruits, the rind of which remains permanently fleshy. The kernel is very bitter; hence the tree is sometimes called bitter nut.

Swan, in ornithology, any individual of the genus Cygnus. The swans

form a sharply-defined group; the body is elongated, the neck very long, head moderate; beak about as long as head; legs short, and placed far back. On the under surface the plumage is thick and fur-like; on the upper side the feathers are broad, but both above and below the body is thickly covered with down. Their short legs render their movements on land awkward and ungainly, but in the water these birds are graceful to a proverb. Their food consists of vegetable substances and weeds, their long necks enabling them to dip below the surface and to reach their food at considerable depths.

COMMON SWAN.

Swan, Joseph Rockwell, an American jurist; born in Westernville, N. Y., Dec. 28, 1802; settled in Columbus, O., in 1824, and became judge of the Supreme Court in 1854. In 1859 he rendered his most important decision. The United States District Court in Ohio had sentenced a prisoner for violating the Fugitive-Slave Law. Under a writ of habeas corpus the Supreme Court of the State sought to set aside the sentence, but it was sustained by Judge Swan, who declared that the State could not reverse the decisions of the United States courts. His publications include: "Statutes of Ohio"; "Swan's Pleadings and Practice"; "Commentaries on Pleadings under the Ohio Code," etc. He died in Columbus, O., Dec. 18, 1884.

Swank, James Moore, an American statistician; born in Westmoreland co., Pa., July 12, 1832; in 1871–1872 he was chief clerk of the United States Department of Agriculture. He early became a strong advocate of the policy of protective tariff. His publications include "History of the Department of Agriculture"; "Iron Making and Coal Mining in Pennsylvania"; "History of the Manufacture of Iron in all Ages"; and many tariff tracts.

Swayne, Noah Haynes, an American jurist; born in Culpeper co., Va., Dec. 7, 1804; settled in Coshocton, O., in 1825; in 1829 he became a Democratic member of the Ohio Legislature. He was United States district attorney for Ohio in 1831–1841. He often appeared as counsel in fugitive-slave cases and on account of his anti-slavery views joined the Republican party on its formation. He was an associate justice of the United States Supreme Court in 1862–1881. In the latter year he resigned owing to advanced age. He died in New York city, June 8, 1884.

Sweating System, the system by which sub-contractors undertake to do work in their own houses or small workshops, and employ others to do it, making a profit for themselves by the difference between the contract prices and the wages they pay their assistants. Laws have recently been enacted both in England and the United States to regulate the system, and providing penalties for the employment of children and others in overcrowded and ill-ventilated "sweat shops."

Sweden (Swedish, Sverige), a kingdom of Northern Europe, comprising with Norway and Lapland the whole of the Scandinavian peninsula, of which it forms the E., S., and most important portion; having N. E. Russian Finland; E. and S. the Gulf of Bothnia and the Baltic; S. W. the Sound, Cattegat, and Skagerrack; and W. and N. Norway, from which it is for the most part divided by the great mountain chain of Scandinavia. Length N. to S. 950 miles; average breadth about 190 miles, area 172,876 square miles; pop. estimated at 5,062,918. Capital, Stockholm; pop. 295,789.

Sweden is divided into three principal regions; Gœthland (Gothia) in the S.; Sweden proper, occupying the center; and Norland (by far the largest part), comprising the remainder.

These three regions are again subdivided into 24 lans, or districts. Sweden is mountainous in the W., but, in general, flat; and it is remarkable that along the whole road from Gottenburg in the W., to Stockholm in the E., there is not a single acclivity of consequence till within a few miles of the latter.

The climate is less severe than might be expected in so high a latitude. The summers are hot, and spring is almost unknown. In the N., snow covers the ground for five or six months in the year; and the W. coasts are milder and more humid than the E.

The domestic animals are the same as those of North America. The others are hares and foxes, beavers, wolves and, in the cold provinces of the N., bears, the leming and the reindeer. Water fowl are abundant and the mosquitoes are as troublesome as they are in tropical countries.

Only about a fiftieth part of the country is cultivated. Agriculture is in a very backward state, but has been recently much improved. Apple, pear, and cherry trees grow but languidly; while berries of many different kinds are produced spontaneously and spread luxuriantly. Wheat succeeds only in the S. provinces; oats are raised more generally, and in larger quantities; but rye and barley are the kinds of grain most frequently met with.

Sweden's government is a constitutional monarchy. The King of Sweden, who is also King of Norway, must be a member of the Lutheran Church. His person is inviolable. He has the right to declare war and make peace, and grant pardon to condemned criminals. He nominates to all appointments, both military and civil; concludes foreign treaties, and has a right to preside in the supreme court of justice. The king has an absolute veto upon any decrees of the Diet, and possesses legislative power in matters of provincial administration and police. In all other respects, the fountain of law is the Diet. This Diet, or Congress of the realm, consists of two chambers, or estates, both elected by the people, but representing different interests.

The two kingdoms, Gothland and Svealand, of which Sweden once consisted, were united in the 13th century by the failure of the royal line in the former. In 1397 by the treaty of Calmar, Sweden became subject to Margaret of Denmark, who has been styled the Semiramis of the North, and who joined the three kingdoms in one. Gustavus Vasa asserted the independence of Sweden and ascended the throne in 1521. He bequeathed the crown to his posterity, who continued to reign, and in general with distinction; but most of them, and in particular, Gustavus Adolphus, his daughter Christina, Charles XII., and Gustavus III., discovered a romantic spirit approaching, in the case of Charles XII., to a degree of infatuation. This dynasty ended in a prince (Gustavus IV.) who had all the eccentricity and hardly any of the talents of his predecessors. In 1809 this last monarch engaging in undertakings totally beyond the resources of his people, was deposed; and next year Marshal Bernadotte of France was elected crown-prince, and in 1818 as Charles John XIV., ascended the throne. In 1814 Norway was annexed to Sweden. In 1857 Charles XV. succeeded his father, Oscar I., and died in 1872, leaving the crown to his son, Oscar II., the present sovereign of Sweden and Norway. Sweden, which has for centuries been apprehensive of Russian encroachments, protested in 1903, against the action of Russian naval officers in deliberately taking soundings and spying upon defenses in the neighborhood of Stockholm.

Swedenborg, Emanuel, founder of the Church of the New Jerusalem, and one of the most distinguished men of science of the 18th century; born in Stockholm, Sweden, Jan. 29, 1688. He was carefully educated in the principles of the Lutheran Church. After pursuing his studies and taking the degree of Ph. D. at Upsal, he went on his travels in 1710, and visited the universities of England, Holland, France, and Germany. He had in the previous year achieved a great engineering feat, in the transport, over a mountain district, of several galleys and boats for service at the siege of Frederickshall. He continued his scientific studies with an ardor that

placed him in the first rank of European philosophers, till the year 1743, when, as he himself affirms, a new era of his life commenced, and he was permitted to hold intercourse with the inhabitants of the invisible world. In 1747, he resigned his office in the mining college, retired from public life, and spending his time alternately in Sweden and in England, devoted himself to the publication of his theological works. The believers in his doctrines are now become a numerous body. Among his very numerous works are: "Philosophical and Mineralogical Works"; "Œconomia Regni Animalis" (Economy of the Animal Kingdom); and "Regnum Animale" (The Animal Kingdom); "Arcana Cœlestia" (The Secrets of Heaven); "On Heaven and Hell," "On Conjugal Love" and the "True Christian Religion." Died in London, England, March 29, 1772.

Swedish Turnip, a kind of turnip, introduced originally from Sweden. The bulb is elongated, the leaves glaucous, the inside either white or, more generally, yellow, the quality not being affected by the variation of color. It is very hardy, not generally suffering injury from intense cold.

Sweeney, Thomas William, an American military officer; born in Cork, Ireland, Dec. 25, 1820; settled in the United States in 1832. In 1846 he was made 2d lieutenant in the 1st New York Volunteers; took part in the bombardment of Vera Cruz and in the assault on Churubusco. After the Mexican War he was commissioned 2d lieutenant in the 2d United States Infantry, and was on duty in California and at other posts in the West, where he was often engaged against the hostile Indians. In January, 1861, he was promoted captain and assigned to the command of the arsenal in St. Louis. He became a Brigadier-General of volunteers in May, 1861, and later colonel of the 52d Illinois Volunteers, with which regiment he took part in the capture of Fort Donelson. During the first day of the action at Shiloh he held the key of the Union position. He was promoted major of the 16th United States Infantry in October, 1863. He won his greatest distinction on July 22, 1864, in the engagement before Atlanta. He there routed the enemy with great slaughter, took 900 prisoners, and four battle flags. He was retired in May, 1870, with the rank of Brigadier-General U. S. A. He died in Astoria, L. I., April 10, 1892.

Sweet, Alexander Edwin, an American journalist; born in St. John, N. B., March 28, 1841. He served in the Confederate army in the Civil War; was editor of the San Antonio (Texas) "Herald" and of "Texas Siftings" from 1881. Died in San Antonio, Tex., May 20, 1901.

Sweet, Benjamin Jeffrey, an American military officer; born in Kirkland, N. Y., April 24, 1832; settled with his parents in Stockbridge, Wis., in 1838. At the outbreak of the Civil War he recruited the 21st and 22d Wisconsin regiments, becoming colonel of the former. For his services while in command at Camp Douglas, Chicago, in preventing an outbreak of the Confederate prisoners, Sweet was promoted Brigadier-General of volunteers. In January, 1872, he was made 1st Deputy Commissioner of Internal Revenue and removed to Washington, D. C., where he died Jan. 1, 1874.

Sweet Briar, or **Sweet Brier,** naturalized in the United States, and grows wild, but is often planted in hedges and gardens on account of the sweet balsamic smell of its small leaves and flowers. It is also called the eglantine.

Sweet Chestnut, a tree with oblong leaves, and clusters of minute, pale greenish-yellow flowers in spikes. The fruit is a prickly husk, with one or more nuts, each with one large seed. It grows wild in America and in the S. of Europe. On the slopes of Etna, where there are forests of it, there grow some old trees with trunks of enormous girth. The chestnuts of commerce are derived chiefly from the cultivated varieties of the tree, and are larger and sweeter than the wild fruit. The nuts are consumed as an article of daily food in the S. of Europe, and in parts of France are served up for breakfast, boiled in milk. The timber is extensively used in America, especially for the inside finishing of houses, furniture, etc.

Sweetflag, a plant, also called sweetrush, found in marshy places throughout the Northern Hemisphere. The stem bears a lateral, dense, greenish spike of flowers; the root is long, cylindrical, and knotted. The root has a strong aromatic odor, and a warm, pungent, bitterish taste, and has been employed in medicine since the time of Hippocrates. It is also used by confectioners as a candy, and by perfumers in the preparation of aromatic vinegar, hair powder, etc.

Sweet Gum, a North American tree about 60 feet high with apetalous flowers. The wood is fine-grained, and well adapted for furniture; the fragrant gum exuding from it when incisions are made in its bark constitutes liquidambar.

Sweet Pea, a familiar garden annual plant. It is a native of Sicily and other parts of the S. of Europe, and has been cultivated for its beautiful and fragrant flowers in American gardens for about 100 years. The varieties are very numerous, distinguished chiefly by the different shades of color of the flowers. It is cultivated as a hardy annual, and is so hardy that it may be sown in autumn and will not only withstand the cold of winter in all but the coldest districts, but will bloom earlier and better than when sown only in spring. Sowing in the latter season is, however, necessary to provide prolongation of bloom.

Sweet Potato, a genus of plants with stems five or six feet long. The leaves are five or six inches long, heart-shaped at the base; the flowers pale purple, closely resembling those of the common convolvulus or bindweed. The roots grow to a great size — to as much as 50 pounds weight, according to some authorities, in Java, but the ordinary average is from 3 to 12 pounds. In favorable conditions in the United States the yield per acre is from 200 to 300 bushels. The taste of the roots is sweetish and agreeable, and they are considered to be superior to the common potato in flesh-forming matters.

Sweet William, in botany and horticulture a plant with leaves lanceolate and nerved; the flowers are aggregated in bundles; petals bearded, whence the book name of bearded pink. It may be single or double; the petals dark purple, red, speckled, or white.

Swift, like swallows in many respects, their structure is almost entirely different, and some naturalists rather class them with the humming birds or the goat suckers. The swift has all four toes directed forward; it is larger than the swallow; its flight is more rapid and steady; and its scream is very different from the twittering of the swallow. Its weight is

COMMON SWIFT.

most disproportionately small to its extent of wing, the former being scarcely an ounce, the latter 18 inches, the length of the body being about 8 inches. Its color is a somber or sooty black, a whitish patch appearing beneath the chin. It builds in holes in the roofs of houses, in towers, or in hollow trees. A common North American swift is the so-called chimney swallow, which builds its nest in chimneys.

Swift, Jonathan, the greatest of English satirists; born in Dublin, Ireland, Nov. 30, 1667. He was the posthumous son of Jonathan Swift,

an Englishman, steward of the Irish inns of court, and was educated at Kilkenny and at Trinity College, Dublin. In 1701 he took his doctor's degree, and in 1704 he published anonymously his famous "Tale of a Tub," to which was appended the 'Battle of the Books." In 1708 appeared, among other things, an attack on astrology under the title of "Predictions for the Year 1708, by Isaac Bickerstaff, Esq.," and in 1709 a 'Project for the Advance of Religion," dedicated to Lady Berkeley, the only work to which he ever put his name. His "Proposal for the Universal Use of Irish Manufactures" (1720), and his celebrated "Drapier's Letters" (1723), made him the idol of the Irish people. His famous "Gulliver's Travels" appeared in 1726. He died in Dublin Oct. 19, 1745, bequeathing the greatest part of his fortune to a hospital for lunatics and idiots. As a writer Swift has, perhaps, never been exceeded in grave irony, which he veils with an air of serious simplicity, admirably calculated to set it off. He abounds in ludicrous ideas, which often deviate, both in his poetry and prose, into very unpardonable grossness. His style forms a fine example of easy familiarity.

Swift, Lewis, an American astronomer; born in Clarkson, N. Y., Feb. 19, 1820. He became interested in astronomy, built and set up his own telescope in Rochester, N. Y., and began to make observations. For years he searched the heavens for comets, and discovered the notable one of 1862. In 1869 he observed a total solar eclipse and secured valuable results. Two years later he found another comet, and in 1877–1879 discovered other comets, for which he was three times awarded the court prize and received a gold medal from the Imperial Academy of Sciences in Vienna.

Swinburne, Algernon Charles, an English poet and essayist, son of Admiral Charles Henry Swinburne; born in London, England, 1837. His first productions were "Queen Mother" and "Rosamund" (1861). They were followed by two tragedies: "Atalanta in Calydon," and "Chastelard," and by "Poems and Ballads," reprinted as "Laus Veneris." He also wrote "A Study of Ben Jonson"; "Astrophel, and Other Poems"; "Studies in Prose and Poetry"; "The Tale of Balen"; and "Rosamund, Queen of the Lombards."

Swinton, John, an American journalist; born in Salton, Scotland, Dec. 12, 1830; early learned the printer's trade; came to Canada about 1853 and afterward to New York city; was chief of editorial staff of the "Times" from 1860 through the war; then with Horace Greeley on the "Tribune" till about 1874; then chief of staff of the "Sun" till 1883, when he resigned to start "John Swinton's Paper," conducting it till 1887. He wrote "The New Issue"; "John Swinton's Travels"; etc. He died in Brooklyn, N. Y., Dec. 15, 1901. He was a man of remarkable courage in the avowal of an unpopular conviction, and esteemed even by those who detested his views.

Swinton, William, an American educator, brother of John; born in Salton, Scotland, April 23, 1833. During the Civil War he was war correspondent of the New York "Times"; from 1869 to 1872 he was Professor of English Language and Literature in the University of California. After 1874 he devoted his time to the preparation of educational works. His writings include: "Rambles Among Words," and "Twelve Decisive Battles of the War." He died in New York city, Oct. 25, 1892.

Switzerland, a federal republic of Central Europe; bounded N. by Alsace-Lorraine and Baden, from which it is separated for the most part by the Rhine; N. E. by Wurtemberg and Bavaria, from which it is separated by the Lake of Constance; E. by Austria and the principality of Lichtenstein, from which it is separated by the Rhine and the Grisons Alps; S. by Italy and France, from which it is separated by the Alps and the Lake of Geneva; and W. and N. W. by France, from which it is separated in part by the Jura Mountains, the Doubs river and Lake Geneva; greatest length 210 miles; greatest breadth 126 miles. It is composed of 22 cantons, three of which are divided into two parts with separate governments

united successively for federal purposes from 1291 to 1815. The constitution of 1848, revised May 29, 1874, transformed the federation of States into a federal State. The largest cities are Geneva, Zurich, Basel, and Berne, the last being the federal capital; total area, 15,976 square miles; pop. 3,119,635.

The characteristic physical features of Switzerland are its lofty mountain ranges, enormous glaciers, magnificent lakes, and romantic valleys. The loftiest mountain chains belong to the Alps, and are situated chiefly in the South. The central nucleus is Mount St. Gothard, which unites the principal watersheds of Europe, and sends its waters into four large basins, N. by the Rhine to the German Ocean, S. W. by the Rhone to the Mediterranean, S. E. by the Po to the Adriatic, and E. by the Danube to the Black Sea. In like manner it forms a kind of starting point for the loftiest ranges of the Alps — the Helvetian or Lepontine Alps to which it belongs itself; the Pennine Alps which include Mount Blanc, the culminating point of Europe, beyond the Swiss frontiers in Savoy; and the Rhaetian Alps which stretch E. and N. E. across the canton of Grisons into Tyrol. Besides the Alps, properly so called, the only range deserving of notice is that of the Jura, which is linked to the Alps by the small range, the Jorat.

Owing to differences of elevation the climate is extremely variable even in the same localities. Owing to the same cause, few countries in Europe even of larger extent can boast of a more varied vegetation than Switzerland. In regard to vegetation it has been divided into seven regions. The characteristic product of the first is the vine, which grows up to 1,700 or 1,800 feet above sea-level. The next is the hilly or lower mountain region, rising to the height of 2,800 feet, and characterized by the luxuriance of its walnut trees, with good crops of spelt and excellent meadows. The third or upper mountain region which has its limit at 4,000 feet, produces forest timber, more especially beech, and has good crops of barley and oats, and excellent pastures. Above this, and up to the height of 5,500 feet, is the fourth or subalpine region, distinguished by its pine forests and maples; here no regular crops are grown. The fifth or lower alpine region, terminating at 6,500 feet, is the proper region of alpine pastures. In the sixth or upper alpine region the vegetation becomes more and more stunted, and the variation of the seasons is lost. The seventh or last region is that of perpetual snow. Many parts even of the lower regions of Switzerland are of a stony, sterile nature, but on every side the effects of persevering industry are apparent, and no spot that can be turned to good account is left unoccupied. Of the total area, 28.4 per cent. is unproductive; of the productive area nearly 35.8 per cent. is under grass and meadows; 29 per cent. under forest; 18.7 per cent. under fruit; and 16.4 per cent. under crops and gardens. The chief crops are wheat, spelt, rye, oats, and potatoes.

Of the population about 40 per cent. are dependent on agriculture, and about 34 per cent. on the manufacturing industry. Switzerland is thus mainly an agricultural and manufacturing country. The system of peasant proprietorship prevails largely, it being estimated that there are nearly 300,000 peasant proprietors. The principal manufactures are cotton, silk, embroidery, watches and jewelry. Geneva is the chief seat of the watch industry, Basel of the silk industry, and St. Gallen of embroidery.

According to the constitution of 1874 there is absolute liberty of conscience and of creed. About 59 per cent. of the inhabitants belong to the Protestant Church, and about 41 per cent. to the Roman Catholic Church. Primary education is secular and compulsory throughout the confederation.

The cantons of Switzerland are united together as a federal republic for mutual defense, but retain their individual independence in regard to all matters of internal administration. The legislative power of the confederation belongs to a federal assembly, and the executive power to a federal council.

The Swiss are a mixed people in race and language. German, French, Italian, and a corrupt kind of Latin called Rhaetian or Roumansch, are spoken in different parts.

Sword, a weapon of offense consisting of a blade fitted into a hilt or handle, with a guard, the blade being formed to cut or to pierce, generally to do both. It is the most highly honored of all weapons, a symbol of military dignity and authority; and it is the instrument with which the monarch confers knightly honors. Its forms and modifications, and the names under which, in different shapes, it has been known in different lands and in successive ages, are beyond computation.

Swordbill, a popular name for any individual of the humming bird genus, Docimastes. The bill which exceeds in length the body of the bird, is a character by which this humming bird may be distinguished at the first glance. Its use is to reach the insects on which the bird feeds at the bottom of long tubular flowers. One species is known, an inhabitant of Colombia, Ecuador, and Peru.

SWORDBILL.

Swordfish, in astronomy, the constellation, Dorado. In ichthyology, a popular name for any individual of the Xiphiidæ. They are pelagic fishes, widely distributed in tropical and subtropical seas, and are extremely strong and swift. Their popular name is derived from their formidable sword-like weapon, formed by the coalescence and prolongation of the maxillary and intermaxillary bones beyond the lower jaw; it is very hard and strong, and capable of inflicting terrible wounds.

SWORDFISH.

Sycamore, an umbrageous tree, 40 to 60 feet high; with spreading branches; large, five-lobed, coarsely and unequally serrate leaves. It flowers in May and June. The wood is used for bowls, trenchers, and other turnery. The sap is saccharriferous.

Sycomore, a tree of the genus Ficus, or sycamore of Scripture, a kind of fig tree. It is very common in Palestine, Arabia, and Egypt, growing thick and to a great height, and though the grain is coarse, much used in building and very durable. Its wide-spreading branches afford a grateful shade in those hot climates, and its fruit which is produced in clusters on the trunk and the old limbs, is sweet and delicate.

Sydenham, Thomas. We find him in London in 1663 as a licentiate of the College of Physicians, publishing his "Method of Curing Fevers" in 1666; and 10 years thereafter taking his M. D. at Pembroke Hall, Cambridge. In 1668 he published a second edition of his book on fevers, adding to it a chapter on plague, with a fine poem in Latin elegiacs addressed to him by Locke. A third and enlarged edition, entitled "Medical Observations," appeared in 1676. In 1680 he published two "Letters in Response," the one "On Epidemics," and the other on the "Lues Venera." His "Epistolary Dissertation" on con-

fluent smallpox and hysteria (1682) was followed next year by his yet more famous "Treatise on Podagra," in 1686 appeared his "On the New Fever," and in 1692 his last work, an outline of pathology and therapeutics. An acute attack of gout carried him off Dec. 29, 1689, and he was interred in St. James's Church, Piccadilly, where in 1810 the College of Physicians erected a mural tablet to his memory.

Sydney, the capital of New South Wales and the parent city of Australia, picturesquely situated on the S. shore of Port Jackson, the shore line being deeply indented by capacious bays or inlets which form harbors in themselves, and are lined with wharves, quays, and warehouses. Some of the older streets are narrow and crooked, bearing a striking resemblance to those of an English town; but the more modern streets rank high in order of architectural merit. The steam tramway system is extended to all parts of the suburbs, and water communication between the city and its transmarine suburbs, Balmain, North Shore, Manly Beach, etc., is maintained by numerous steam ferries. The entrance from the Pacific Ocean to Port Jackson, about 4 miles N. E. of Sydney, is 1 mile in width, and is strongly fortified; the bay itself is about 10 miles in length and 3 in average breadth; it is well sheltered, and has a depth of water sufficient to float the largest vessels. Besides wharves and quays there are dry docks and other accommodation for shipping, and the trade of the port is very large. The principal exports are wool, tallow, hides, preserved meat, tin, copper, etc.; the imports, grain, tea, coffee, sugar, wine, and spirits, ironware and machinery, cotton and woolen goods, wearing apparel, furniture, etc. Sydney was founded in 1788, and was named in honor of Viscount Sydney, the colonial secretary. It was incorporated in 1842. The discovery of gold in the colony in 1851 gave an immense impetus to its progress. Population 386,400.

Sykes, George, an American military officer; born in Dover, Del., Oct. 9, 1822; was graduated at the United States Military Academy in 1842; and during the war with Mexico took part at the actions of Monterey, Vera Cruz, Cerro Gordo, Contreras, Churubusco, and the siege and surrender of the City of Mexico. In May, 1861, he was promoted major of the 14th Infantry, and in September of the same year appointed Brigadier-General of volunteers. Later he won distinction at Gaines' Mills, and in the several subsequent operations of the Army of the Potomac; was promoted Major-General of volunteers in November, 1862; took part in the battles of Chancellorsville and commanded the 5th Army Corps during the battle of Gettysburg. At the close of the war he was brevetted Major-General U. S. A. for gallantry in service during the war. He was promoted colonel of the 20th United States Infantry in January, 1868. He died in Brownsville, Tex., Feb. 9, 1880, while in command of Fort Brown. His remains were removed to the West Point cemetery at the expense of Congress and a fine monument was erected to his memory.

Syllabus, in Church history, a list embracing the "chief errors and false doctrines of our most unhappy age," compiled by order of Pope Pius IX., and sent, with an encyclical letter, dated Dec. 8, 1864, "to all the bishops of the Catholic world, in order that these bishops may have before their eyes all the errors and pernicious doctrines which he had reprobated and condemned," the number of which amounts to 80, probably in imitation of the 80 heresies mentioned by Epiphanius as existing in the first three centuries.

Syllogism, in logic, an argument expressed in strict logical form, so that its conclusiveness is manifest from the structure of the expression alone, without any regard to the meaning of the terms. (Whately.) In a perfect syllogism there must be three, and not more than three propositions, the last of which, containing the matter to be proved, is called the conclusion; the other two, containing the means by which the conclusion is arrived at, are called the premises. The subject of the conclusion is called the minor term, and its predicate the major term; the third term, with which the minor and major terms are compared in the premises, is called the middle

term. The premise which brings into relation the major and the middle terms is called the major premise, and that which brings the minor and middle term into a similar relation is called the minor premise.

Sylphs, in the fantastic system of the Paracelsists, the elemental spirits of the air, just as the salamanders are of fire and the gnomes of earth. They hold an intermediate place between immaterial and material beings. They eat, drink, speak, move about, beget children, and are subject to infirmities like men; but, on the other hand, they resemble spirits in being more nimble and swift in their motions, while their bodies are more diaphanous than those of the human race. They also surpass the latter in their knowledge, both of the present and the future, but have no soul, and when they die nothing is left.

Sylva, Carmen, pseudonym of Elizabeth, Queen of Rumania, a German author; born in Castle Monrepos near Neuwied, Rumania, Dec. 29, 1843. In 1869 she was married to Charles, then Prince, now King of Rumania.

Sylvanus, in mythology, a rural Latin deity, who is generally represented as half a man and half a goat. He was sometimes represented as holding a cypress in his hand.

Sylvester I., a Pope who governed the Church during the reign of Constantine I. He was famous for the number of churches completed during his reign, among them the basilicas St. Peter's and St. Paul's; for his various Church laws and his influence over the emperor. He held office in 314–335.

Sylvester II., a Pope. His attainments in science procured him the reputation of a magician. Among the numerous useful inventions attributed to Sylvester II. is the balance clock which was in use till the adoption of the pendulum in 1650. Sylvester II. was tutor to Otho III., and subsequently head of the school of Rheims, which he made one of the first in Europe. Robert, afterward King of France, was among his pupils. He was called to the papal chair on the death of Gregory V., and administered the affairs of the Church with much prudence and moderation. He was the first French Pope. He died at a great age in 1003.

Symbiosis, a biological term introduced by De Bary to denote certain kinds of physiological partnership between organisms of different kinds. Consortism is synonymous. As there are many kinds of organic association, it is convenient to restrict the term symbiosis to such intimate and complementary partnerships as exist between algoid and fungoid elements in lichens, or between unicellular algæ and radiolarians.

Symbol, that which specially distinguishes one regarded in a particular character, or as occupying a particular office; and fulfilling its duties; a figure marking the individuality of some being or thing; as, a trident is the symbol of Neptune. In chemistry, an abbreviation of the name of an elementary body: thus C for carbon, H, hydrogen, P, phosphorus, etc.

Sympathetic Nerve, in anatomy, a nerve, or system of nerves, running from the base of the skull to the coccyx, along both sides of the body, and consisting of a series of ganglia along the spinal column by the side of the vertebræ. With this trunk of the sympathetic there are communicating branches which connect the ganglia, or the intermediate cord, with all the spinal and several of the cranial nerves proceeding to primary branches on the neighboring organs or other ganglia, and finally numerous flexures of nerves running to the viscera. Various fibers from the sympathetic communicate with those of the cerebro-spinal system. The term sympathetic has been applied on the supposition that it is the agent in producing sympathy between different parts of the body. It more certainly affects the secretions. Called also sympathetic system.

Sympathetic Powder, in old medicine, powder of sympathy; a powder of vitriol, introduced by Sir Kenelm Digby (1603–1665), who published a small book, on its merits, and made known the method of its preparation in his "Chymical Secrets." The powder was said to be highly efficacious "in stanching of desperate bleeding at the nose, in stanching the

blood of a wound, and in curing any green wound (where there is no fracture of bones) without any plaister or oyntment, in a few days."

Sympathetic Strike, a labor strike carried out by other crafts than the one primarily concerned, to the end that the first strike may be forced to a successful issue by a general cessation of business till the point in dispute in the initial strike may be decided. Of such a character was the great railroad strike in the United States in 1894, when the railroad employes struck in sympathy with the Pullman Car Company's employes.

Sympathy, a feeling corresponding to that felt by another; the quality or state of being affected by the affections of another, with feelings corresponding in kind if not in degree; compassion, fellow feeling, commiseration. Also, an agreement of affections or inclinations; a conformity of natural temperament, which makes two persons pleased or in accord with each other; mutual or reciprocal affection or passion; community of inclination or disposition.

Symphony, an elaborate musical composition for a full orchestra, consisting, usually, like the sonata, of three or four contrasted, yet inwardly related movements. Haydn, Mozart, Mendelssohn, and Beethoven are the most successful composers of this class of compositions.

Synagogue, a congregation or assembly of Jews for the purpose of worship or the performance of religious rites. Also, a building set apart for Jewish as a church or chapel is for Christian worship.

Synchronograph, a telegraphic device invented by Prof. Albert C. Crehore, of Dartmouth College, and Lieut. George O. Squier, two young scientists who were associated in the development of the polarizing photochronograph, the machine adopted by the United States government for measuring the velocity of projectiles. The invention of the synchronograph is based on the use of alternating currents in telegraphing. In the instruments now in common use, a continuous current is employed. This current is broken to make the required dots and dashes, by which the messages are sent, resulting in "sparking" and delay. In an alternating circuit, however, there is a point at each alternation when the current is not running at all. This exact instant is seized in the new machine for making and breaking the circuit, and hence the "sparking" and consequent delay are avoided. In the words of Professor Bedell, the signaling over a line is accomplished by means of omitting particular waves of the alternating current.

Syncopation, in grammar, the contraction of a word by the omission of one or more letters or syllables from the middle. In music, suspension or alteration of rhythm by driving the accent to that part of a bar not usually accented. Syncopation may be completed in a bar, or it may be carried by sequence through several bars, or it may be so that more than one bar is involved in the syncopation. Syncopated counterpoint is the fourth species of counterpoint.

Syncope, the name given to that form of death characterized by failure and cessation of the heart's action as its primary feature. The term is also applied to the state of fainting produced by a diminution or interruption of the action of the heart, and of respiration, accompanied with a suspension of the action of the brain and a temporary loss of sensation, volition, and other faculties. Fatal syncope is usually the result of some nervous "shock," resulting from some severe lesion of organs, or from a want of blood, or an altered and abnormal state of blood pressure. Ordinary syncope is caused chiefly by weakness, mental emotion, etc.

Syncretistic Controversy, the name given to a series of controversies which arose in the Lutheran Church in the 17th century, from the subject of the discussion — the promotion of fellowship and union between the Protestant churches of Germany.

Syndicates, originally, councils or bodies of syndics; afterward, associations of persons formed with a view of promoting some particular enterprise, discharging some trust, or the like; now, combinations of capitalists for the purpose of controlling production and raising prices; popularly

known in the United States as "trusts."

The terms "syndicate" and "trust" have, however, both lost their original meaning as applied to industrial combinations, the trust method of maintaining separate corporations, and intrusting their stock to certain trustees representing the parties interested having given way almost entirely to the later and lawful plan of the organization of a new corporation which purchases out and out the interests of the companies and individuals concerned. This latter form of monopoly cannot be successfully assailed in the courts, although its effect in destroying and preventing competition is even more potent than was the trust method. The United States Steel Corporation, for instance, became the absolute owner of the plants under its control, subject only to a first mortgage to Andrew Carnegie. Yet the term "trust," in the sense of monopoly, is colloquially and in ordinary newspaper parlance applied to this organization.

The term "syndicate" is not, properly speaking, synonymous with "trust" in any sense. It is a combination of financial interests, usually large moneyed houses, in New York and other cities, to carry forward some great enterprise, to float the bonds of some new corporation, or to accept and dispose of a National, State or municipal loan. It is of necessity temporary in its existence and operations, and in no sense like a "trust" or corporate monopoly, which has permanent profit in view.

Synesius, Bishop of Ptolemais in the Libyan Pentapolis, acted also the various parts of soldier, diplomatist, orator, philosopher and poet; born in Cyrene about A. D. 375.

In 411 the people of Ptolemais, fearing the appointment of a corrupt governor, fixed on Synesius as their bishop. Synesius was most unwilling; but at last he yielded and was consecrated at Alexandria in 410.

The Ausurians invaded the country, and Synesius had to spend his nights on the ramparts and personally direct the defense. About this time his only surviving child died. Synesius was completely broken with his numerous troubles, and although the city was relieved he fell ill and died about 413.

Synonym, a term commonly applied in a restricted sense to words having substantially the same meaning, with only slight shades of difference — as "observe" and "remark."

Synod, a meeting or assembly of ecclesiastical persons for mutual deliberation on matters of difficulty or of general interest affecting the churches over which they rule, and designed for their guidance. In the early Church there were four kinds of synod. First, an Œcumenical, that is, a General or Universal Synod, commonly called a General Council; second, a National Synod, attended by the clergy of one nation only; third, a Provincial Synod, attended by the clergy of a province; and fourth, a Diocesan Synod, attended by the clergy of a single diocese. Among the Presbyterians a synod is a "court" intermediate between the General Assembly and a Presbytery, or, if no Assembly exist, it is then itself the highest court. It is divided into Presbyteries, of which there are never less than three. Each congregation is represented by a minister and an elder.

Synodical Period, in astronomy, the period between two successive conjunctions or oppositions of two heavenly bodies. A synodical month is a lunation, being the period from one full moon to the next full moon, or from new moon to next new moon. It is 29 days, 12 hours, 44 minutes, 2.37 seconds.

Synoptic Gospels, the first three Gospels, Matthew, Mark, and Luke, which regard events from the same point of view, and present close resemblances to each other. Four hypotheses have been framed to account for the correspondences: (1) That the Synoptic Gospels were derived from the common written source or sources. (2) That the earlier Gospels were consulted in the composition of the later ones. (3) That all the three were derived from oral tradition. (4) That they were all derived partly from oral tradition, but that the second was also copied from the first, and the third from the first and second. The Synoptic Gospels treat of the

humanity rather than the divinity of Jesus, though not in any way ignoring the latter.

Syntax, that part of grammar which treats of the manner of connecting words into regular sentences, constructing sentences by the due arrangement of words or members in their mutual relations according to established usage.

Synthesis, in chemistry, the building up of more or less complex bodies by the direct union of their elements, or of groups of elements. Thus, water can be produced synthetically by the union of two atoms of hydrogen with one atom of oxygen. In logic, the method by composition, in opposition to the method of resolution or analysis. In synthesis, we reason from axioms, definitions, and already known principles, till we arrive at a desired conclusion. Of this nature are most of the processes of geometrical reasoning. In synthesis, we ascend from particular cases to general ones; in analysis, we descend from general cases to particulars.

Syra, the most important, though not the largest of that group of islands in the Ægean Sea known as the Cyclades. It is about 10 miles long by 5 broad, has an area of 42½ square miles and is bare, rocky, and not very fertile. Its prosperity is of quite modern growth. Pop. of island 31,573. The capital, Syra, is the chief commercial entrepot of the Ægean. Every year it imports, principally manufactured wares (one-third of total), hides, grain and flour, yarns, timber, iron, salt fish, rice and coal to the average value of $6,052,500, and exports tobacco, emery stone, valonia, sponges, and fresh vegetables to the average value of $516,400.

Syracuse, a city and county-seat of Onondaga co., N. Y.; on Onondaga Lake, and the Erie canal. It has large salt interests, and the product is known far beyond the bounds of the United States, while its institutions of learning, both public and private are of a high order, and well attended.

The chief industry has always been the manufacture of salt. There are numerous salt companies, which manufacture both by solar and artificial heat, employing a vast amount of capital and a multitude of men. Other industries include iron furnaces, machine shops, manufactories of silver, tinware, sheet iron, coach and wagon factories, and breweries. Pop. (1890) 88,143; (1900) 108,374.

Syracuse, anciently a famous city of Sicily; on the S. E. coast of the island; 80 miles S. S. W. of Messina; was founded by Corinthian settlers about 733 B. C. The colonists seem to have occupied the little isle of Ortygia, which stretches S. E. from the shore. The settlement rapidly rose to prosperity, and toward the end of the 6th century B. C. sent out colonies of its own. Little is known of the early political state of Syracuse; but about 485 the ruling families, probably descendants of the original colonists, were expelled by the lower classes of citizens. Gelon, despot of Gela, restored the exiles and at the same time made himself master of Syracuse. He increased both the population and the power of his new state, and won the highest prestige by a great victory over the Carthaginians at Himera. In 467 B. C. the democracy again got the upper hand — Thrasybulus, a "tyrant" of the baser sort, being expelled; and for 60 years a free and democratic government was enjoyed, under which Syracuse flourished more than it had ever done. During this period occurred the great struggle with Athens (415–414 B. C.). Nine years later Dionysius restored the "tyranny" of Gelon, and during a reign of nearly 40 years greatly increased the strength and importance of the city. In 317 B. C. Agathocles, a rude soldier of fortune, once more restored the despotic form of government, which continued with scarcely an interruption through the reign (50 years) of the enlightened Hiero II., the friend and ally of Rome, down to the conquest of the city by the Romans after a siege of two years, in which Archimedes perished (212 B. C.). Under the Romans Syracuse slowly declined, though with its handsome public buildings and its artistic and intellectual culture, it always continued to be the first city of Sicily. It was captured, pillaged, and burned by the Saracens in A. D. 878, and after that sank into complete and ruinous decay.

The modern city Siracusa, is confined to the original limits, Ortygia, which, however, is no longer an island but a peninsula. The people manufacture chemicals and pottery, and trade in fruits, olive oil, wine (exports), wheat, timber, and petroleum (imports) to the annual value of $1,250,000. Pop. 26,072.

Syracuse University, a coeducational institution in Syracuse, N. Y.; founded in 1871 under the auspices of the Methodist Episcopal Church.

Syria, a country of Western Asia, embracing the regions that lie between the Levant and the Euphrates from Mount Taurus in the N. to the S. border of Palestine, or even to the peninsula of Sinai. The physical confirmation of Syria is throughout simple and uniform. A range of mountains, split in the N. into two parallel chains — Libanus and Anti-Libanus — fronts the Mediterranean, ranging in height from 6,000 feet in the N. up to 10,000 feet in the central parts, but falling again in the S. to 3,500 feet. Behind these mountains lies a table-land, that gradually falls away E. to the desert. The climate on the plateau is generally dry, and in certain localities hot. The valley of the Jordan is remarkably hot. The soil is in many parts possessed of good fertility, and in ancient times, when irrigation was more extensively practised, yielded a much greater return than it does at the present time. Damascus is noted for its gardens and orchards. Northern Syria is the home of the olive. The vine grows in nearly all parts of the country. Fruit (oranges, figs, etc.), is cultivated on the coast plains. Sheep and goats are the most important of the domestic animals. The principal exports are silks, cereals, soap, sponges, sesame, licorice, cottons, and tobacco. Manchester (England) goods are the chief imports. Chief port, Beyrout, and to it must be added Acre, Caiffa (Haifa), Tyre, and Tripoli. The pop. is estimated at 3,317,600. The bulk of the inhabitants are Mohammedans, but do not all profess the orthodox Sunnite creed; for instance, there are the Druses, certain sects of Shiites, and others. The Christians make up about one-fifth of the total. The principal ethnic elements in the population are descendants of the ancient Syrians (Aramæans) and Arabs, these last both settled and nomad.

Syriac, a dialect or branch of the Aramaic, and thus one of the Semitic family of languages. It was a vernacular dialect in Syria during the early centuries of our era, but ceased to be spoken as a living language about the 10th century, being crowded out by that of the Arabian conquerors. A very corrupted form of it, however, is still spoken by a few scattered tribes, and principally by the Nestorians of Kurdistan and Persia.

Syringa, in botany, the lilac. Deciduous shrubs, with simple leaves, and very fragrant flowers in terminal thyrsoid panicles. Known species about six. Natives apparently of Southeastern Europe and Central and Eastern Asia. Syringa vulgaris is the lilac.

Syrup, in popular language, the uncrystallizable fluid finally separated from crystallized sugar in the process of refining, either by the draining of sugar in loaves, or by being forcibly ejected by the centrifugal apparatus in preparing moist sugar, commonly known as golden syrup. By sugar manufacturers the term syrup is applied to all strong saccharine solutions which contain sugar in a condition capable of being crystallized out, the ultimate uncrystallizable fluid being distinguished as molasses or treacle. In chemistry, a saturated, or nearly saturated, solution of sugar in water. In pharmacy, syrups; a preparation in which sugar forms an important ingredient, and gives a peculiar consistence to the liquid. Its general use is to disguise the flavor of drugs; but in some cases, as in that of the iron iodide, the sugar preserves the active ingredient from undergoing chemical change.

Systyle, in architecture, a term applied to a building in which the pillars are closely placed, but not quite so close as in the pycnostyle, the intercolumination being only two diameters, or four modules, of the columns. A temple or other edifice which has a row of columns set close together around it, as in the Parthenon, at Athens.

T, the 20th letter and 16th consonant of the English alphabet, is a sharp, mute consonant, and closely allied to d, both being dentals. It is formed by pressing the tip of the tongue closely against the root of the upper teeth, and differs from d only in being non-vocal, while d is uttered with the voice.

Tabard, Taberd, Tabert, or **Tabeld,** a light vestment worn over the armor, and generally embroidered with the arms of the wearer. It was close-fitting, open at the sides, with wide sleeves or flaps reaching to the elbows. It originally reached to the middle of the leg, and was afterward made shorter. It was at first worn chiefly by the military, but afterward became an ordinary article of dress of other classes in England and France in the Middle Ages. The office was created in 1417 by Henry V. for the service of the Order of the Garter, which till then had been attended by Windsor heralds. The tabard is now worn only by heralds and pursuivants at arms, and is embroidered with the arms of the sovereign.

Tabb, John Banister, an American educator and author; born in Virginia, March 22, 1845. He was Professor of English Literature at St. Charles College, Ellicott City, Md. He wrote: "Poems"; "Lyrics"; "Rules of English Grammar"; etc.

Tabby, silk or other stuff having an irregular waved or watered surface produced by pressure, usually between engraved rollers in the mode of calendering, known as tabbying. There is but little difference between tabbying, watering, and moire, the effect in each case being produced by the flattening of some of the fibres while the others remain undisturbed, causing the different parts to reflect the light unequally. A mixture of lime with shells, gravel, or stones in equal proportions, forming a mass which, when dry, becomes as hard as rock. It is used in Morocco as a substitute for brick or stone in building.

Tabernacle, a slightly-constructed temporary building or habitation; a tent, a pavilion. Figuratively, a temple; a place of worship; a sacred place; specifically, the central place of worship for Israel till Solomon built the temple. Also, the human frame as the temporary abode of the soul.

In the Roman Church, a receptacle for the consecrated host for benediction and the ciborium containing the smaller hosts which the laity receive.

Tabernacles, Feast of, in Jewish antiquities, one of the three leading Jewish feasts, on the recurrence of which all the males were required to present themselves at Jerusalem. During this feast the people dwelt on their house-tops or elsewhere in booths made of the branches of trees, in commemoration of their tent life in the wilderness.

Tabes, a term formerly applied to a disease characterized by a gradually progressive emaciation of the whole body, accompanied with languor, depressed spirits, and, for the most part, imperfect or obscure hectic fever, without the real cause of the affection being properly localized or defined.

Tablature, in anatomy, a division or parting of the skull into two tables. In art, a painting on a wall or ceiling. In music, a general name for all the signs and characters used in music; those who were well acquainted with these signs were said to sing by the tablature.

Tableaux Vivants, "living pictures," representations of works of painting and sculpture, or of scenes from history or fiction, by living persons. They are said to have been invented by Madame de Genlis, when she had charge of the education of the children of the Duke of Orleans. They were long common in theatres, as they are now in private circles.

Table-land, in physical geography, a plateau; a plain existing at some considerable elevation above the sea. Volcanic rocks often make such table-lands, as in Central India; so do limestones. Or a sea bed or a lake bed, or a great stretch of country, may be upheaved. In North America there are plateaux along the Pacific, Labrador, etc., and in South Aemrica in Brazil and the adjacent countries.

Tables, in mathematical science, pure or applied, lists of numbers giving the values of a function of a variable for different values of that variable. The function may be a physical property common to different substances, as in tables of densities, specific heats, etc.; or it may be a mathematical function of a continuously varying variable tabulated for definite successive values of that variable, as in table of logarithms, sines, tangents, and astronomical tables generally.

Taboo, or **Tabu,** a Polynesian word, denoting an institution which was formerly in existence throughout Polynesia and New Zealand, but has now to a large extent disappeared before the spread of Christianity and civilization. The word signifies something set apart, either as consecrated or accursed, the idea of prohibition being conveyed in either case, whence the English word, tabooed, i. e., forbidden. For example, in New Zealand the person of a chief was strictly taboo, and hence might not be touched; while the volcano Tongariro was taboo as being the supposed residence of demons, and even to look on it was at one time forbidden.

Tabor, Mount, a solitary elevation on the N. E. border of the plain of Esdraelon. It is remarkable for the symmetry of its form, which resembles a truncated cone, from certain points appearing almost hemispherical. The top measures about half a mile across, and is about 1,300 feet above the level of the plain. It is not mentioned in the New Testament, but there is a tradition that it was the scene of the Transfiguration. This, however, is rendered impossible by the town on the top.

Tabor, Horace, Austin Marner, an American capitalist; born in Holland, Vt., Nov. 30, 1830; went to Colorado in 1859, and engaged in mining. He worked with only moderate success till 1878, when he discovered a rich deposit of silver in what was afterward known as the "Little Pittsburg" mine. A year later he sold his interests in this property for $1,000,000; a sum which eventually yielded him a fortune estimated at $6,000,000. In 1884 he was chosen United States Senator, to fill the unexpired term of Henry M. Teller. Soon afterward he began to suffer serious financial losses. Bad investments and the panic of 1893 swept away all his fortune and drove him to begin life anew as a miner. He returned to Colorado and opened a mine which proved a failure. He was appointed postmaster of Denver in 1898, in which office he continued to serve till his death, April 10, 1899. During his prosperous days he did much toward the improvement of the city of Denver.

Taborites, a section of Calixtines, who received their name from a great encampment organized by them on a mountain near Prague in 1419, for the purpose of receiving the Communion in both kinds. On the same spot they founded the city of Tabor, and, assembling an insurrectionary force, marched on Prague under the lead of Ziska (July 30, 1419), and committed great atrocities under the pretense of avenging insults offered to the Calixtine custom of communicating under both kinds. On the death of King Wenceslaus (Aug. 16, 1419) they began to destroy churches and monasteries, to persecute the clergy, and to appropriate church property on the ground that Christ was shortly to appear and establish His personal reign among them. They were eventually conquered and dispersed in 1453 by George Podiebrada (afterward King of Bohemia).

Tabriz, or **Tabreez** (the ancient Tauris), a city of Persia, capital of the province of Azerbijan, on the Aigi, 36 miles above its entrance into Lake Urumia. It is surrounded with a wall of sun-dried brick, with bastions, and entered by seven or eight gates. There are numerous mosques, bazaars, baths, ad caravanserais. Tabriz has manufactures of silks, cottons, carpets, leather and leather goods, etc. It is the great emporium for the trade of Persia on the W., and has an extensive commerce. It has frequently suffered from earthquakes. Population 180,000.

Tacitus, the historian, is known to us chiefly from autobiographical touches in his own writings and from allusions in Pliny's letters. Born perhaps in Rome, under the Emperor Claudius between A. D. 52 and 54, it is inferred that his family was respectable from his education, his profession, and his marriage. He rose to eminence as a pleader at the Roman bar; and in 77 or 78 married the daughter of Agricola, the conqueror and governor of Britain.

Under Emperor Nerva he became consul suffectus, succeeding the great and good Virginius Rufus, on whom he delivered in the Senate a splendid oraison funebre. In A. D. 99, conjointly with the younger Pliny, he prosecuted the political malefactor, Marius Priscus, and the "characteristic dignity" with which his share of the prosecution was conducted won him the thanks of the Senate. After this we lose sight of him, but may assume it as certain that he saw the close of Trajan's reign, if not the opening of Hadrian's. The high reputation he enjoyed in life is attested by the eulogistic mention of him repeatedly made in Pliny's letters, and in the 3d century the Emperor Tacitus, proud to claim kinship with him, built in his honor a tomb which was still standing in the later decades of the 16th century, when it was destroyed by Pope Pius V. The same emperor also issued an edict by which the works of his namesake were to be copied out 10 times yearly for presentation to as many public libraries.

Tacitus, Marcus Claudius, a Roman emperor; born in Terni, Umbria, about A. D. 200; was elected on the death of Aurelian, A. D. 275, when in his 75th year. He was descended from the great historian, and had been twice consul; but he reigned only six months, in which short space he displayed singlular wisdom, vigor, and moderation. He was assassinated at Tyana, in Cappadocia, in 276.

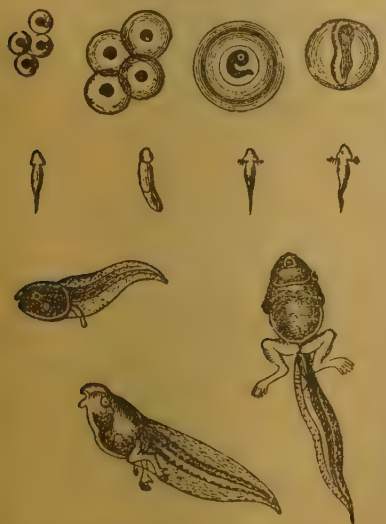
Tack, in nautical language: (1) The lower forward corner of a fore-and-aft sail. (2) The lower, weather corner of a coursè, or lower square sail. (3) The rope by which the forward lower corner of a course or stay-sail is drawn forward and confined. (4) A rope by which the lower corner of a studding-sail is drawn outward and held to the boom. (5) Hence, the course of a ship in regard to the position of her sails; as, the starboard tack or port tack; the former when she is close-hauled with the wind on her starboard, the latter when close-hauled with the wind on her port side. To tack is to change the course of a ship by shifting the tacks and position of the sails from one side to the other; to alter the course of a ship through the shifting of the tacks and sails. Tacking is an operation by which, when a ship is proceeding in a course making any acute angle with the direction of the wind on one of her bows, her head is turned toward the wind, so that she may sail in a course making nearly the same angle on the other bow.

Tackett, John Robert, an American physician; born near Water Valley, Miss., July 28, 1857; was graduated at Tulane University, La., in 1889, and later studied at the New York Polyclinic. He was commissioner to Havana, Cuba, to investigate the yellow-fever conditions for the State Board of Health in 1897; and acting assistant surgeon in the United States army in 1898. During the Spanish-American War he served in the Cuban and Porto Rican campaigns, and was in charge of the yellow-fever hospital near Santiago, Cuba.

Tactics, Military, the branch of military science which relates to the conduct of troops in battle. Strategy, on the other hand, refers to the movements leading up to a battle.

Tactics, Naval, the art of maneuvering ships and fleets for the purpose of battle. Naval strategy, on the other hand, is the science of combining and employing fleets or single ships in order to carry out defined operations at sea or against an enemy's coast, for obtaining command of the sea or certain portions of it.

Tactile Corpuscle, in anatomy, one of the three kinds of sensory terminal organs. They were discovered by R. Wagner and Meissner. They are mostly of oval form, nearly one three-hundreths of an inch long, by one eight-hundreth thick. They have a core of soft homogeneous substance within, and a capsule of connective tissue with oblong transverse nuclei outside. They exist in certain papillæ in the skin of the hand and foot, on the fore-arm, and the nipple.



METAMORPHOSIS OF A TADPOLE.

Tadpole, the larva of the anurous amphibia, sometimes so far extended as to include larvæ of the urodela, which undego a much less complete metamorphosis. At first the young have no respiratory organs or limbs. They are all head and tail with simple entire gills which soon disappear, to be followed by others of more complicated structure, situated within the cavity of the body as in fishes. After a certain length of time the hind legs begin to appear, the head becomes more developed, and the body assumes a more compact form. Still later the forelegs are found to exist fully formed beneath the skin and ready ultimately to burst forth. The tadpole at first seems to derive its subsistence from the fluid absorbed within its body and on the surface, but soon begins to seek its food amidst softened or decomposing vegetable matter. From that period the tadpole begins to assume more and more the appearance of a frog. Toes appear on its hind legs, the tail very rapidly disappears by absorption, and finally the fore-legs become fully developed and the metamorphosis of the tadpole is completed.

Tael, a money of account in China, the value of which varies considerably according to locality and the rate of exchange. On Oct. 1, 1901, it was worth in different localities from $0.639 to $0.704 in American gold. The tael is also a definite weight, equal to 1.208 ounces Troy.

Tæniada, cestoid worms; an order containing the tapeworms and bladder worms. Internal parasites, hermaphrodite when mature. The body is elongated and consists of a head with many flattened articulations. The small narrow head or scolex contains nearly all the organs of the body, and is essentially the animal, the articulations, called metameres or proglottides, being generative segments thrown off by the head in the manner called budding or "gemmation." Each reproductive joint contains both male and female organs. The joints nearest the head are the newest, those farthest from it are the most mature. The anterior end of the body, or forepart of the scolex, is provided with suckers, hooks, or foliaceous appendages, or with all three combined. There is no mouth or alimentary canal, so that it must derive materials for its nourishment only by absorption through the skin. The whole animal is called a strobilus. After a time some of the metameres break off, the worm continuing to grow.

Taffety, or **Taffeta,** a term formerly applied to all plain silks simply woven by regular alternations of the warp and weft. Modifications have, however, been introduced, by varying the quality of the warp and weft and by the substitution of various colors for the single one of the original taffety. It has therefore become a sort of generic term for plain silk, and even for some combinations of silk, wool, etc.

Taffrail, originally the upper flat part of a ship's stern, so called because frequently ornamented with carvings or pictures; now a transverse rail which constitutes the uppermost member of a ship's stern.

Taft, Alphonso, an American jurist; born in Townsend, Vt., Nov. 5, 1810; was graduated at Yale University. He was judge of the Cincinnati Superior Court in 1866–1872; was appointed Secretary of War, March 8, 1876; served in that capacity till May 22 of the same year; and was then made attorney-general. He was United States minister to Austria in 1882–1884, and to Russia in 1884–1885. He died in San Diego, Cal., May 21, 1891.

Taft, William Howard, first civil governor of the Philippine Islands, and world-famous through his negotiations with the Pope of Rome in behalf of the United States government in relation to the claims of the friars in the Philippine Islands; was born in Cincinnati, Ohio, Sept. 15, 1857, son of Alphonso Taft; was graduated from Yale in 1878, and from Law School of Cincinnati College in 1880; admitted to Ohio bar same year; has been public prosecutor, judge of the Superior Court of Ohio; judge of United States Circuit Court, and in June, 1901, was appointed governor of the Philippines. Selected to take office as secretary of war upon the retirement of Mr. Root in 1904.

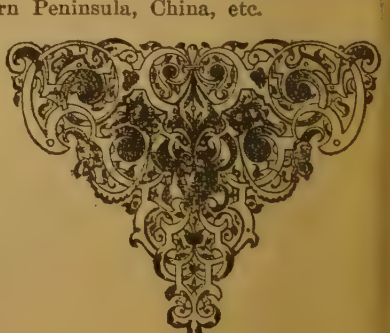
Tages, in mythology, a grandson of Jupiter, and the first who taught the 12 nations of the Etruscans the arts of augury and divination. He was said to have arisen from a clod of earth turned up by the plow of an Etruscan laborer, and to have assumed human shape in order to instruct the Etruscans.

Taguicati, the warree, or white-lipped peccary. It is about 40 inches long, of blackish color, with the lips and lower jaw white.

Tailor Bird, a small bird about six inches long; general color olive greenish; wings brown, edged with green; crown of the head rufous, inclining to gray on the nape; tail light brown; outer feathers narrowly tipped with white; under surface of the body

TAILOR BIRD.

white; legs flesh-colored. The male has the two center tail-feathers lengthened. A native of India, the Eastern Peninsula, China, etc.



TAIL-PIECE.

Tail-piece, a piece at the end, as of a series of engravings; an appendage. Also a piece of ebony or other material appended to the end of a violin or other similar instrument, to

which the strings are fastened. In printing, tail-pieces are ornaments in wood or metal placed in short pages, partly to fill up the vacancy.

Taine, Hippolyte Adolphe, a French writer; born in Vouziers, Ardennes, France, April 21, 1828; was educated at the College Bourbon and the Ecole Normale. His "History of English Literature," one of the best and most philosophical works on the subject, appeared in 1864 (4 vols.). He died in Paris, March 5, 1893.

Tainter, Charles Sumner, an American inventor; born in Watertown, Mass., April 25, 1854; was the inventor of the graphophone, and an associate inventor of the radiophone, an instrument for transmitting sounds to a distance through the agency of light; and was a member of the United States expedition to the South Pacific to observe the transit of Venus in 1874. He received a gold medal at the Electrical Exhibition in Paris in 1881 for his inventions in connection with the radiophone, and in 1899 was given the French Academy's decoration "Officer of Public Instruction" for the invention of the graphophone.

Taipings, the name given by foreigners to the followers of Hung Hsiu-ch'wan, who raised the standard of rebellion in China in 1851, and whose enterprise was finally suppressed in 1865.

Tait, Archibald Campbell, Archbishop of Canterbury; born in Edinburgh, Scotland, Dec. 22, 1811; was educated at the Edinburgh Academy and Glasgow University, whence he passed as a Snell exhibitioner to Balliol College, Oxford. In 1842 he was appointed successor to Dr. Arnold as head master of Rugby, in 1849 became Dean of Carlisle, and in 1856 Bishop of London, as successor to Blomfield. In 1868 he was made primate of all England by Mr. Disraeli. He took a keen interest in missions, and greatly helped to extend and improve the organization of the Church in the colonies. The Lambeth Conference of 1878 took place under his auspices. He lost in 1878 both his only son, the Rev. Craufurd Tait, and his wife, a daughter of Archdeacon Spooner, whom he had married in 1843; and he himself died Dec. 3, 1882.

Tait, John Robinson, an American artist; born in Cincinnati, O., Jan. 14, 1834. He was for several years the art critic of the New York "Mail and Express" and was the author of "European Life, Legend and Landscape," "Dolce far Niente" and numerous papers on art subjects in leading magazines.

Tai-Yuen, a town of China, capital of Shan-si; on the Fuen-Ho, an affluent of the Hoangho, 250 miles S. W. of Peking. For many years the residence of the emperors, it is noted for its magnificent mausoleums. The chief manufactures are sword blades and knives. Pop. about 200,000.

Tajacu, or **Tajassu,** in zoölogy, the collared peccary, the smaller of the two species of the genus. It is about 36 inches long, dark gray in color, with a white or light gray band across the chest from shoulder to shoulder.

THE TAJ MAHAL.

Taj Mahal, or **Mehal** ("Gem of Buildings"), a famous mausoleum, erected at Agra, India, by Shah Jehan for his favorite wife. It is 186 feet square with the corners cut off, and

consists of two tiers of arches, with a single-arched porch in the middle of each side, the whole surmounted by a dome 58 feet in diameter and about 210 feet in height, flanked by four octagonal kiosks. The interior is divided into four domed chambers in the corners, and a large central arcaded octagon, all connecting by corridors. The central octagon contains two cenotaphs surrounded by a very noticeable openwork marble rail. The only light admitted enters through the delicately pierced marble screens of the windows. The decoration is especially noticeable for the stone mosaics of flower themes and arabesques, much of them in agate, jasper, and bloodstone. The entire structure stands on a white marble platform 18 feet high and 313 feet square, with tapering cylindrical minarets 133 feet high at the corners.

Talavatchi, a subtle poison, of which the constituents are unknown, formerly manufactured by the Aztecs, and by them handed down to their descendants, the Mexican Indians. Skillfully administered, it is said to destroy the mind while leaving slight effects on the body. The peculiar effect of the poison seems to be to induce monomania or epilepsy, and sometimes both.

Talbot, Charles Remington, an American Episcopal clergyman and writer; born in 1851; died in 1891.

Talbot, Eugene S., an American dentist; born in Sharon, Mass., March 8, 1847; was graduated at the Pennsylvania Dental College in 1871; received the degree of M. D. from the Rush Medical College in 1880; and became Professor of Dental Surgery at the Woman's Medical College. In 1890 he was honorary president of the Dental Section at the 10th International Medical Congress in Berlin, and in 1897 honorary president of the Dental Section at the 12th International Medical Congress in Moscow.

Talc, an orthorhombic mineral occurring in short hexagonal prisms and plates, also in globular and stellated groups, compact, massive. Luster, pearly; color, apple-green, white shades of gray; sectile; feel, greasy. Composition, varying with the amount of water present, but essentially a hydrated silicate of magnesia. Being thoroughly incombustible it is of great value in the manufacture of fireproof wall paper, paper window curtains, etc. Even in its crude state it is found to yield one of the best lubricants known. Mixed with common grades of soap, it makes them as pleasant to the touch as the choicest brands, rendering the skin smooth and soft, though entirely without any cleansing qualities. It is also largely used in the manufacture of patent wall plaster, in which its addition gives a smooth, glossy finish to walls and ceilings that no other substance lends. Talc powder, duly refined, is exquisitely soft and fine grained. Hence it makes an excellent infant powder, softening the tenderest skin and preventing chafing, irritation, or even "prickly heat," as will no other substance. So, too, it makes an unsurpassed molding sand for casting metals in, both in fire-proof and fire-grained qualities being very valuable in fine work. The richest talc mines are now being worked in Cherokee co., N. C., where it is found in leaves and scales, very much like slate.

Talegalla, or **Brush Turkey,** a genus of gallinaceous birds. Of the four species the Australian is best known. It is a large bird, almost the size of a female turkey, with blackish-brown plumage, pink-red head and neck, and yellow wattle. It inhabits the thickly-wooded parts of New South Wales. The flesh of the bird is excellent, and the eggs are also very delicate and eagerly sought after. It is thought that this bird might be added to the list of domestic poultry.

Talent, figuratively: (1) A gift, endowment, or faculty; some peculiar faculty, ability, power, or accomplishment, natural or acquired. (2) Mental endowments or capacities of a superior kind: general mental power (used in either the singular or the plural). (3) Hence, used for talented persons collectively; men of ability or talent. (4) Habitual backers of horses, or takers of odds, as opposed to the bookmakers, or layers of odds.

In Greek antiquity, the name of a weight and also of a denomination of money among the ancient Greeks, and also applied by Greek writers and

their translators to various standard weights and denominations of money among different nations.

Taliera, in botany, a palm tree, akin to the talipot, but only about 30 feet high. The trunk is nearly cylindrical, and has at the top a number of fan-shaped leaves. The fruit which is about the size of a crab apple, is wrinkled and of a dark color. It grows in India, where the leaves are used for roofing houses. The natives also write on them with their iron or steel styles.

Talipot, Talipat, or **Taliput,** a palm tree, native of Ceylon and the Malabar coast, and cultivated in Bengal and Burma. It has a tall, cylindrical stem, with a soft rind and soft pink internal pith, both formed of vascular bundles. The leaves are in a cluster at the top of the stem, and are fan-shaped. The pith is made into a kind of sago, the leaves are written upon by the natives with a steel stylus; they are, moreover, made into fans, mats, and umbrellas.

Talisman, a species of charm, consisting of a figure engraved on metal or stone when two planets are in conjunction, or when a star is at its culminating point, and supposed to exert some protective influence over the wearer of it. The terms talisman and amulet are often considered nearly synonymous, but the proper distinctive peculiarity of the former is its astrological character.

Talitrus, in zoölogy, a genus of Amphipoda. They have no feet in the form of claws. It is a little more than half an inch long. It exists in myriads along sandy shores between high and low water mark, feeding on decaying garbage. It can leap several feet into the air, and escapes pursuit by burrowing into the damp sand or taking refuge under moist seaweed.

Talladega College, a coeducational institution in Talladega, Ala.; founded in 1867 under the auspices of the Congregational Church.

Talleyrand-Perigord, Charles Maurice de, Prince of Benevento, a French diplomatist; born in Paris, France, Feb. 13, 1754. In 1790 he was elected president of the National Assembly. In 1792 he was sent to London charged with diplomatic functions, and during his stay there was proscribed for alleged royalist intrigues. Forced to leave England by the provisions of the Alien Act, in 1794 he sailed for the United States, but returned to France in 1796. The following year he was appointed minister of foreign affairs; but being suspected of keeping up an understanding with the agents of Louis XVIII. he was obliged to resign in July, 1799.

He now devoted himself entirely to Bonaparte, whom he had early recognized as the master spirit of the time, and after Bonaparte's return from Egypt contributed greatly to the events of the 18th Brumaire (Nov. 10, 1799), when the directory fell and the consulate began. He was then reappointed minister of foreign affairs, and for the next few years was the executant of all Bonaparte's diplomatic schemes. After the establishment of the empire in 1804 he was appointed to the office of grand-chamberlain, and in 1806 was created Prince of Benevento. After the peace of Tilsit in 1807 a coolness took place between him and Napoleon, and became more and more marked. In 1808 he secretly joined a royalist committee. In 1814 he procured Napoleon's abdication, and afterward exerted himself very effectually in re-establishing Louis XVIII. on the throne of his ancestors. He took part in the Congress of Vienna, and in 1815, when the allies again entered Paris, he became president of the council with the portfolio of foreign affairs; but as he objected to sign the second peace of Paris he gave in his resignation. After this he retired into private life, in which he remained for 15 years. When the revolution of July, 1830, broke out, he advised Louis Philippe to place himself at its head and to accept the throne. Declining the office of minister of foreign affairs he proceeded to London as ambassador, and crowned his career by the formation of the Quadruple Alliance. He resigned in November, 1834, and quitted public life forever. He died in Paris, May 17, 1838.

Tallien, Jean Lambert, a French revolutionist; born in Paris in 1769. A prominent Jacobin, he became, after Aug. 10, secretary of the Insurrec-

tionary Commune, was one of the leading "Septembrists," and afterward eloquently defended the massacres he had promoted. His services on this occasion gained him a seat in the Convention, where he was an earnest defender of Marat, and a savage advocate for the execution of the king. Tallien placed himself at the head of the party afterward known as the Thermidorians, vigorously attacked the triumvirate of terror, and ultimately brought about its downfall. From this point his political influence declined. Tallien continued in the legislature till 1798, when he accompanied Bonaparte to Egypt in the character of savant. The ship in which he was returning was captured by an English cruiser, and he was feted by the Whig party in London in 1801. Tallien, after holding for some years the post of French consul at Alicante, died in Paris, Nov. 16, 1820, in poverty and obscurity.

Tallmadge, Benjamin, an American military officer; born in Brookhaven, N. Y., Feb. 25, 1754. He attained the rank of colonel; in September, 1779, captured a band of Tories on Long Island; and in 1780 took Fort George, on the same island. He was a member of Congress in 1801–1817. He died in Litchfield, Conn., March 7, 1835.

Tallow, in chemistry, a name applied to the harder and less fusible fats occurring chiefly in the animal kingdom, the most common being beef and mutton tallow. When pure it is white and almost tasteless, and consists of stearin, palmitin, and olein in varying proportions.

Tallow Tree, a native of China. The leaves are rhomboidal, tapering at the tip, with two glands at the top of the petiole. The fruits are about half an inch in diameter, and have three seeds, which are covered by a kind of wax, used in China for making candles, whence the name.

Tally, a notched stick employed as a means of keeping accounts. In buying or selling it was customary for the parties to the transaction to have two sticks, or one stick cleft longitudinally into two parts, on each of which was marked with notches or cuts the number or quality of goods delivered, or the amount due between debtor and creditor, the seller keeping one stick and the buyer the other. The mode of keeping accounts by tallies was introduced into England by the Normans, 1066. Besides accounts, other records were formerly kept on notched sticks, as almanacs, in which red-letter days were signified by a large notch, ordinary days by small notches, etc. Such were formerly very common in most European countries. In England tallies were long issued in lieu of certificates of indebtedness to creditors of the State. In 1696, according to Adam Smith, this species of security was at 40–60 per cent. discount, and bank notes 20 per cent. Seasoned sticks of willow or hazel were provided, and these were notched on the edge to represent the amount. Small notches represented pence; larger, shillings; still larger, pounds; proportionately larger and wider, were 10, 100, 1,000 pounds. The stick being now split longitudinally, one piece was given to the creditor, and the other was laid away as a record. When an account was presented for payment, the voucher was compared with the record. When paid, the tally and counter-tally were tied up together, and laid away, accumulating for a long series of years. The system of issuing exchequer tallies was abolished by an act of George III., and by acts of William IV., the accumulated tallies were ordered to be destroyed. They were accordingly burned in a stove in the House of Lords, but the stove being over-heated, unfortunately set fire to the paneling of the room, and the Houses of Parliament were destroyed. Anything made to correspond with or suit another. A label or ticket of wood or metal used in gardens for the purpose of bearing either the name of the plant to which it is attached, or a number referring to a catalogue.

Talmage, Thomas De Witt, an American clergyman; born in Bound Brook, N. J., Jan. 7, 1832; was graduated at the New Brunswick Theological Seminary in 1856. He was pastor of the Central Presbyterian Church in Brooklyn, N. Y., in 1869–1894, and afterward became associate and later became full pastor of the

First Presbyterian Church in Washington, D. C. He held this charge till 1899, when he resigned in order to apply himself wholly to literary work. His sermons were published every week for 30 years, and in 1901 it was estimated that their publication in 3,600 different papers had carried them to no fewer than 30,000,000 people weekly. He was for many years the editor of the "Christian Herald," and was the author of "Crumbs Swept Up," "Woman: Her Powers and Privileges"; "From Manger to Throne"; "Every-Day Religion," etc. He died in Washington, D. C., April 12, 1902.

Talmage, James Edward, an American geologist; born in Hungerford, England, Sept. 21, 1862. His family immigrated to Utah in 1876, having become Mormons. He was president of the Latter-day Saints College, Salt Lake City, in 1888–1893, and president of the University of Utah in 1894–1897, when he resigned the presidency of the latter, but retained the chair of geology there.

Talmud, the name of the fundamental code of the Jewish civil and canonical law, comprising the "Mishna" and the "Gemara," the former as the text, the latter as the commentary and complement.

Talpa, the mole; the typical genus with eight species. Body stout and thick, furry; head long and pointed, muzzle cartilaginous, protected by snout bones; eyes very small, no external ears; fore-feet short and wide, with five united toes, armed with trenchant nails for digging; hind-feet with five toes, but weak; tail short. Except in the common mole, which ranges from England to Japan, the eyes are covered by a membrane.

Talus, in anatomy, the ankle bone. It articulates with the tibia above, the os calcis below, and the scaphoid in front. It receives the weight of the body from the leg. In architecture, the slope or inclination of any work, as of a wall inclined on its face, either by decreasing in thickness toward the summit or by leaning it against a bank, as a retaining or breast wall. In fortification, the slope of a work, as a bastion, rampart, or parapet. In geology, a sloping heap of rocky fragments broken off from the face of a steep rock by the action of the weather, and accumulating at its base. So called from its resemblance to a talus in fortification. In surgery, a variety of club-foot, in which the heel rests on the ground, and the toes are drawn toward the leg.

Tamarack, the American or black larch. It has weak and drooping branches, which sometimes take root, forming a natural arch. The leaves are clustered and deciduous, the cones oblong with numerous spreading scales. It constitutes a feature of the forests in Canada and the Northern United States. Its timber is valuable, but less so than the larch.

Tamarin, the name of certain South American monkeys. The tamarins are active, restless, and irritable little creatures, two of the smallest being the silky tamarin and the little lion monkey, the latter of which, though only a few inches in length,

Tamarind, an evergreen tree, 80 feet high by 25 in circumference, cultivated in India as far N. as the Jhelum, and very largely planted in avenues and "topes." The wood, which is yellowish-white, sometimes with red streaks, is hard and close-grained. It weighs about 83 pounds per cubic foot, is highly prized, but is very difficult to work, and is used in India for turning wheels, mallets, planes, furniture, rice-pounders, oil and sugar mills, etc. The West Indian and South American variety has legumes only three times as long as broad, whereas the Indian tree has them six times as long.

The tamarinds sold in the United States are chiefly West Indian tamarinds. They differ from the Black or East Indian tamarinds, of which the preserved pulp is black.

Tambourine, or **Tambourin,** an ancient pulsatile musical instrument of the drum class, popular among all European people, but particularly those of the S. The Biscayan and Italian peasantry employ it on every festal occasion. It is formed of a hoop of wood, sometimes of metal, over which is stretched a piece of

parchment or skin; the sides of the hoop are pierced with holes, in which are inserted pieces of metal in pairs, called jingles. Small bells are sometimes fastened on to the other edge of the hoop. It is sounded by being struck with the knuckles, or by drawing the fingers or thumb over the skin, which produces what is called "the roll," a peculiar drone mingled with the jingle of the bells or pieces of metal.

TAMARIND: BRANCH IN FLOWER.
a seed-pot section.

Tambour Work, a species of embroidery on muslin or other thin material, worked on circular frames which resemble drum heads. The practice of tambouring is rapidly dying out, being replaced by pattern weaving, by which tambour work can be closely imitated.

Tamias, in zoölogy, the ground squirrel; a genus with four species, all found in North America. They are popularly known as chipmunks, and are among the commonest of the indigenous rodents.

Tamils, the name of a race which inhabits South India and Ceylon. The Tamils belong to the Dravidian stock of the inhabitants of India, and are therefore to be regarded as among the original inhabitants who occupied the country before the Aryan invasion from the N., but they adopted the higher civilization of the Aryans. The Tamil language is spoken not only in South India and Ceylon, but also by a majority of the Indian settlers in places further E., as Peru and Penang. There is an extensive literature, the greater part of it in verse.

Tammany, Society of, or Columbian Order, formed in New York city in 1789, as a counterweight to the so-called "aristocratic" Society of the Cincinnati; deriving its name from a noted friendly Delaware chief named Tammany, who had been canonized by the soldiers of the Revolution as the patron saint of America. The grand sachem and 13 sachems were intended to typify the President and the governors of the 13 original States.

The society was at first a social organization, but about 1800 entered politics. Tammany was for a short time allied with DeWitt Clinton, but they separated and Tammany came to be recognized as the regular Democratic organization of New York City (now of Manhattan and the Bronx boroughs), a position which it still holds.

Strictly speaking the Tammany Society is wholly distinct from the Tammany Organization, the former being still in name at least a benevolent institution, while the organization is wholly political, and practically includes all "regular" Democrats in the old city of New York, now the boroughs of Manhattan and the Bronx. The present leader of Tammany Hall is Charles F. Murphy, a comparatively young man, and former Commissioner of Docks in New York city.

Tamtam, or **Tomtom,** a kind of native drum, used in the East Indies and Western Africa.

Tanacetum, tansy. Strong-scented herbs, often shrubby below. Found in most continents.

Tanagers, a family of the Passeriformes, or perching birds, containing nearly 400 species; the bill is usually conical, more or less triangular at the base, with the cutting edges not much inflected, and frequently notched near the tip of the upper mandible. They are mostly birds of small size, the largest barely exceeding a song thrush,

and the smallest, being hardly four inches in length. With the exception of a few species which visit North America in summer, the tanagers are confined to Central and South America and the West Indies. Some genera of tanagers are remarkable for their beauty of plumage, which is sometimes confined to the male sex, and sometimes possessed by the female also. Tanagers do well in captivity and several species may usually be seen in zoölogical gardens.

Tancred, a hero of the first crusade; born in Sicily in 1078; in 1098 assumed the cross, and with his cousin Bohemond set out on the crusade. At Dorylaion (July 4, 1097) his bravery saved the camp of priests and women; his banner was the first to float from the towers of Tarsus, though Baldwin's jealousy dislodged it thence. In the siege of Antioch he slew, say chroniclers, 700 infidels; with Robert of Normany he first set foot in the Holy City July 15, 1099. Appointed by Godfrey de Bouillon prince of Galilee, he founded churches in Nazareth, in Tiberias, and on Mount Tabor, and helped at Ascalon to guard the new Christian kingdom against the Fatimite caliph. He was busy with plans for bringing the Syrian chieftains under his sway, when he died in Antioch of a wound received in battle (1112).

Taney, Roger Brooke, an American statesman; born in Calvert co., Md., March 17, 1777; was graduated at Dickinson College in 1795. During the war with Great Britain he led the wing of the Federal party that upheld the policy of the government. In 1827 he became attorney-general of Maryland and in December, 1831, succeeded John M. Berrien as attorney-general of the United States. He was appointed Secretary of the Treasury under President Jackson on Sept. 24, 1833, but was forced to resign the next year, owing to his action with regard to the removal of the treasury deposits. On Dec. 26, 1835, however, he was nominated Chief-Justice of the United States and confirmed by the United States Senate on March 15, 1836. While in this office he rendered decisions on many important cases, notably those of Dred Scott, and Sherman M. Booth, both bearing on the Fugitive Slave Law. He died in Washington, D. C., Oct. 12, 1864.

Tangent, in geometry, a straight line which meets or touches a circle or curve in one point, and which, being produced will not cut it. Any line drawn at right angles to the diameter of a circle at its extremity is a tangent to the circle.

Tanistry, a mode of tenure among various Celtic tribes, according to which the tanist or holder of lands or honors had only a life estate in them, and his successor was appointed by election. According to this system the right of succession was hereditary in the family, but elective in the individual. The primitive intention seems to have been that the inheritance should descend to the most worthy of the blood and name of the deceased. This was in reality giving it to the strongest, and the practice often occasioned bloody wars in families.

Tank Worm, the Guinea worm in a certain stage of its development, when the young have been set free from the body of their parent and inhabit the "tanks" so common in India. It is supopsed that it penetrates the body of bathers when it is very minute.

Tanner, Benjamin Tucker, an American clergyman; born of African parents in Pittsburg, Pa., Dec. 25, 1835; studied theology in the Western Theological Seminary in Holland, Mich.; was editor of the "Christian Recorder" for 16 years, and founded the African Methodist Episcopal "Church Review," of which he was editor for four years.

Tanner, Henry S., an American cartographer; born in New York city in 1786; settled in Philadelphia in early life, but returned to New York in 1850, and engaged in map making. His maps include the "Map of the United States and Mexico"; "Map of the United States of America," etc. He was also the author of "Description of the Canals and Railroads of the United States," and other topographical works. He died in New York city in 1858.

Tanner, James, an American lawyer; born in Richmondville, N. Y., April 4, 1844; enlisted as a private in the 87th New York Volunteers in

1861; was promoted corporal; and took part in the second battle of Bull Run where he lost both his legs. He was taken prisoner in the engagement but was soon paroled and in 1866 returned to New York; studied law; and was admitted to the bar in 1869. He then accepted a place in the New York custom house, was promoted through the various grades to deputy collector, and in 1877 became deputy tax collector under General Arthur. He held that office till 1885, and in 1889 was appointed United States Commissioner of Pensions.

Tannhauser, or **Tanhauser,** in old German legend, a knight who gains admission into a hill called the Venusberg, in the interior of which Venus holds her court, and who for a long time remains buried in sensual pleasures, but at last listens to the voice of the Virgin Mary, whom he hears calling on him to return. The goddess allows him to depart, when he hastens to Rome to seek from the Pope (Pope Urban) absolution for his sins. The Pope, however, when he knows the extent of the knight's guilt, declares to him that it is as impossible for him to obtain pardon as it is for the wand which he holds in his hand to bud and bring forth green leaves. Despairing, the knight retires from the presence of the pontiff, and enters the Venusberg once more. Meanwhile the Pope's wand actually begins to sprout, and the Pope, taking this as a sign from God that there was still an opportunity of salvation for the knight, hastily sends messengers into all lands to seek for him. But Tannhauser is never again seen. The Tannhauser legend has been treated poetically by Tieck, and Richard Wagner has adopted it (with modifications) as the subject of one of his operas.

Tansy, a genus of Compositæ, numbering about 50 species of strong-scented herbs, often shrubby below, with alternate usually much-divided leaves, and solitary or corymbose heads of rayless yellow flowers. The genus is represented in North America, Europe, North and South Africa, temperate and cold Asia. Common tansy has long had a reputation as a medicinal herb, causing it to be much grown in gardens in the past.

Tantalidæ, a family of grallatorial birds, the chief of which inhabit tropical latitudes, living almost entirely on the swampy banks of rivers and lakes. The genus Tantalus is characterized by having the head in the adult entirely destitute of feathers. It includes the wood ibis of the Southern States. Among the American species are the red or scarlet ibis of South America and the West Indies, accidental in the United States; and the white ibis, or white curlew of the

TANSY.

South Atlantic and Gulf States, rarely N., which is 25 inches long, the wing 11, and the bill 7 inches; color white. This species feeds largely on crawfish. The sacred ibis, or Egyptian ibis is an African bird, 30 inches in length, and covered with white and black plumage. It was one of the birds worshipped by the ancient Egyptians.

Tantalus, in Greek mythology, a King of Lydia, son of Zeus. He was father of Niobe and Pelops, by Dione, one of the Atlantides, and is represented by the poets as punished in Hades with an insatiable thirst, and placed up to the chin in the midst of a pool of water, which flowed away as

soon as he attempted to taste it. There hung also above his head a bough, richly loaded with delicious fruit, which, as soon as he attempted to seize it, was carried away from his reach by a sudden blast of wind. He was thus punished either for theft, cruelty, impiety, or lasciviousness; for the causes are variously stated.

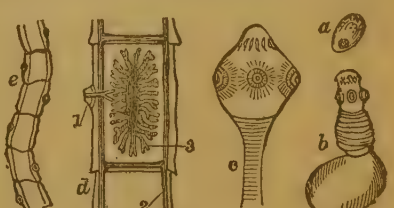
Taoism, or **Taonism,** one of the three religions of China. Its founder, Laotse, lived, according to tradition, in the 6th century B. C. Tao is a word meaning "way." It would seem that Tao represented the course which Laotse thought a man should pursue in order to overcome evil. The whole teaching was vague and unsatisfactory; but its followers made a great advance on those that had preceded them, by believing firmly that ultimately good would gain the victory over evil, and by insisting that good should be returned for evil, as the sure way to overcome it. Taoism was largely modified by Buddhism, some of the doctrines and practices of which it adopted; but it still adheres to its old superstitions, though in its treatises it enjoins much of the Confucian and the Buddhistic morality.

Tapestry, an ornamental textile used for the covering of walls and furniture, and for curtains and hangings. In its method of manufacture it is intimately related to Oriental carpets, which are made in precisely the same way as certain kinds of tapestry, the only distinction being that carpets are meant for floor-coverings alone. Fine storied tapestries are, however, much more elaborate and costly than any carpets, and they have altogether different artistic pretensions.

The art of tapestry-working is of high antiquity. It came to Europe from the East, and so well was this recognized that during the Middle Ages the fabric was generally known as Sarrazinois. So far as is known the art of high warp tapestry weaving was first practised in Flanders toward the end of the 12th century, and it flourished in the rich and prosperous towns of Arras, Valenciennes, Lille, Brussels, etc., and from the predominant importance of the first of these towns storied tapestries came to be generally known as "Arras."

Tapestries — especially the high warp storied varieties — are the textiles of kings. In earlier times the monarchs of Europe resorted to the Netherlands for pieces for the decoration of their palaces; and when the manufacture came to be more disseminated it was almost entirely under State supervision and control that the work was carried on. The pieces made were almost exclusively reserved for royal use, and to be given as presents in connection with great State celebrations and functions. The very foremost artists devoted their best energies to the production of designs and full-sized cartoons for the guidance of the weavers; and it was as patterns for tapestry that Raphael produced the immortal series of cartoons illustrating the acts of Christ and the Apostles which were executed in Brussels for the Sistine Chapel. Seven of these cartoons, purchased by Charles I. under the advice of Rubens, are now in South Kensington Museum.

Tapeworm, an intestinal worm, Tænia solium, in form somewhat resembling tape. Its length is from 5 to 15 yards, and its breadth from two lines at the narrowest part to four or



TAPEWORMS.

a, ovum with contained embryo; *b*, cysicercus longicollis; *c*, head of tænia solium (enlarged); *d*, a single segment or proglottis magnified; 1, generating pore; 2, water vessels; 3, dentritic ovary; *e*, portion of tapeworm, natural size, showing the alternating arrangement of the generative pores.

five at the other or broader extremity. At the narrow end is the head, which is terminated anteriorly by a central rostellum, surrounded by a crown of small recurved hooks, and behind them four suctorial depressions; then follow an immense number of segments,

each full of microscopic ova. The segments are capable of being detached when mature, and reproducing the parasite. There is no mouth; but nutrition appears to take place through the tissues of the animal, as algæ derive nourishment from the sea water in which they float. The digestive system consists of two tubes or lateral canals, extending from the anterior to the posterior end of the body, and a transverse canal at the summit of each joint.

The tapeworm lives in the small intestines of man, affixing itself by its double circle of hooks. When the reproductive joints or proglottides become mature, they break off and are voided with the stools. They may get into water, or may be blown about with the wind, till some of them are at length swallowed by the pig, and produce a parasite which causes measles in the pig. When the measly pork is eaten by man, a tapeworm, the ordinary, appears in his intestines. This species mainly affects the poor, who are the chief pork-eaters. Called more fully the pork tapeworm. The beef tapeworm has no coronet of hooks on the head. The segments are somewhat larger than in the ordinary tapeworm. It is 15 to 23 feet long. The cysticercus of this species forms measles in the ox, and is swallowed by man in eating beef. It chiefly affects the rich. The broad tapeworm, Bothriocephalus latus, is 25 feet long by nearly an inch broad, and chiefly affects the inhabitants of Switzerland, Russia and Poland.

Tapioca, the powdered root or rhizome of Manihot utilissima. The root, which is about 30 pounds in weight, and is full of a poisonous juice, is washed, rasped, or rasped and grated, to a pulp. This, being well bruised and thoroughly washed, is heated on iron plates, by which process the poison is drawn off. The powder, when dry, consists of pure starch, and is baked into bread by the natives of Central America. In the United States and Europe it is generally made into puddings, and forms a light and nutritious diet. Pearl tapioca is made from prepared grain.

Tapir, any individual of the genus Tapirus. The South American tapir is about the size of a small ass, but more stoutly built, legs short, snout prolonged into a proboscis, but destitute of the finger-like process which is present in the elephant's trunk. The skin of the neck forms a thick rounded crest on the nape, with a short, stiff name. It is plentiful throughout South America, ranging from the Isthmus of Darien to the Straits of Magellan.

AMERICAN TAPIR.

Tappan, Benjamin, an American naval officer; born in New Orleans, La., April 10, 1856; was graduated at the United States Naval Academy, June 20, 1876. He served on the "Raleigh," on which he took part in the battle of Manila Bay, May 1, 1898. During the attack on Manila city, in August, 1898, he commanded the launch "Barcelo," took her through the breakers and captured a Spanish battery. For this he was advanced five numbers, Aug. 23, 1898; was commissioned lieutenant-commander July 1, 1899. He was assigned to duty in the branch hydrographic office in Baltimore, Md., March 26, 1900.

Tappan, Frederick D., an American financier; born in New York city Jan. 29, 1829; was graduated at the University of New York in 1849, and in the following year became specie clerk in the National bank of New York, now the Gallatin National bank, of which he was elected president in 1868. He was president of the New York Clearing House Association for many years, and was exceptionally instrumental in enabling the banks and large business concerns

of the city to successfully meet several great financial panics. He died in Lakewood, N. J., Feb. 28, 1902.

Tar, a product of the destructive distillation of various organic substances; but the tars of commerce are obtained: 1st, from the distillation of coal, etc., for gas (gas tar or coal tar), and 2d, from the distillation of wood (wood tar). Gas or coal tar, which was formerly regarded as a troublesome and almost useless by-product of the gas manufacture, is now a substance of so much value that it is second only in importance to the gas itself. Its value in recent times has arisen almost entirely from the fact that it is the source of the wide range of important dyeing substances, which, derived from aniline, phenol and anthracene respectively, may all be classed as tar colors.

Wood tar is obtained as a by-product in the destructive distillation of wood for the manufacture of pyroligneous acid (wood vinegar), and methyl alcohol (wood spirit). It is in the same way obtained in Northern Europe in connection with the preparation of wood charcoal. In addition to its various uses in the arts of coating and preserving timber and iron in exposed situations, and for impregnating ships' ropes and cordage, it has various applications for external use in medicine owing to its antiseptic properties.

Tara Fern, a large species of bracken, the rhizome of which was one of the principal articles of food of the Maoris before the settlement of New Zealand by the British colonists. The roots, about an inch in circumference, were cut in pieces, dried, and stacked. For use the root was steeped in water, dried in the sun, and then roasted. Good flour was obtained from it by beating on a stone.

Tarantula, a large spider, with a body about an inch in length; its bite was formerly supposed to produce Tarantism, and doubtless in some cases, produces disagreeable symptoms. It is a native of Italy, but varieties, or closely allied species, are found throughout the S. of Europe. The tarantulas of Texas and adjacent countries are large species of Mygale. Also, a dance, or the music to which it is performed.

Taraxacin, the bitter principle of dandelion root, extracted from the milky juice by boiling with water and allowing the concentrated decoction to evaporate. It forms warty crystals of a sharp, bitter taste, soluble in ether, alcohol, and boiling water.

Tarbell, Ida Minerva, an American writer; born in Erie co., Pa., Nov. 5, 1857; was graduated at Allegheny College; studied in Paris 1891–1894; was associate editor of "The Chautauquan" (1883–1891), of "McClure's Magazine" (1894—). She wrote: "Life of Napoleon Bonaparte"; "Life of Madame Roland"; "Life of Abraham Lincoln"; etc.

TARANTULA.

Tare, the common name of different species of a genus of leguminous plants, known also by the name of vetch. There are numerous species and varieties of tares or vetches, but that which is found best adapted for agricultural purposes is the common tare, of which there are two principal varieties, the summer and winter tare. They afford excellent food for horses and cattle, and hence are extensively cultivated throughout Europe. One species is found in the fields in United States.

Tare, an allowance or deduction made on the gross weight of goods sold in boxes, barrels, bags, etc., for the weight of the boxes, etc. Tare is said to be real when the true weight

of the package is known and allowed for; average, when it is estimated from similar known cases; and customary, when a uniform rate is deducted.

Target, a shield or buckler of a small size, circular in form, cut out of ox-hide, mounted on light but strong wood, and strengthened by bosses, spikes, etc.; often covered externally with a considerable amount of ornamental work. Also, the mark set up to be fired at in archery, musketry, or artillery practice, or the like.

Target Practice. The use of stationary targets for practice in the United States army has given place to that of appearing and disappearing targets, which stimulate activity and increase the skill of the gunners. American soldiers, and particularly those of the regular service, have the reputation of being the best shots in the world, the latter having had much experience in snap shooting by reason of their service on the plains.

Targum, the general term for the Aramaic versions—often paraphrases—of the Old Testament, which became necessary when, after and perhaps during the Babylonian Exile, Hebrew began to die out as the popular language, and was supplanted by Aramais. The targum, long preserved by oral transmission, does not seem to have been committed to writing until the first centuries of the Christian Era. There were different Targums, all of which taken together, form a paraphrase of the whole of the Old Testament except Nehemiah, Ezra, and Daniel.

Tariff, a list or table of goods with the duties or customs to which they are liable, either on exportation or importation; a list or table of duties or customs to be paid on goods imported or exported, whether such duties are imposed by the government of a country or are agreed on between the governments of two countries having commerce with each other. The scale of duties depends on the supply and demand of goods, the interests and wants of the community, etc., and is therefore constantly changing.

The tariff legislation of the United States has been constantly fluctuating, and has grown yearly in importance as a question of foreign policy. The most noted tariff bill ever passed by Congress was that taking its name from the then chairman of the Committee on Ways and Means, the late President McKinley. This tariff imposed high duties on imports, some specific and others ad valorem. It was repealed in 1894 by the passage of the Wilson bill, which became a law by the refusal of President Cleveland to sign or veto it. On the tariff question the nation has generally been pretty evenly divided, or with but a slight preponderance in favor of a high protective duty. Of former tariff measures that proposed in 1833 by Henry Clay, of Kentucky, and known as the compromise tariff, occupies the most prominent place in American history.

At the present time, though Great Britain is regarded as a free-trade country, yet on her tariff are listed 19 articles of import, from which she derives an average of about 20 per cent of her total revenue. The British tariff is based not on an ad valorem tax, but depends entirely on a specific import, in some cases modified by a range of price between the highest and lowest figures, which it sets for an article. Thus for spirits worth a certain amount per gallon, the tax is so much per barrel, while for spirits of the next higher grade (according to price per gallon) a higher duty per barrel is collected. The question of a protective tariff is still an issue in the United States between the two great political parties, and will doubtless figure in the Presidential contest of 1904. Public opinion, irrespective of party seems to be favorable to this method of raising revenue, and as there is use for all the revenue raised, tariff discussion is largely academic in the United States. In England the issue has been accentuated in 1903 by the stand of Joseph Chamberlain, the great English statesman, favored by Premier Balfour, in behalf of "fair trade," the English equivalent for protective duties. "English Free Trade: its Foundation, Growth and Decline," by Henry Mann, 1888, which is out of print, but in most large libraries, tells the story of the struggle for "fair trade" in England up to the date of publication.

Tarkio College, a coeducational institution in Tarkio, Mo.; founded in 1883; under the auspices of the United Presbyterian Church.

Tarpan, the wild horse of Tartary, belonging to one of those races which are by some authorities regarded as original. They are not larger than an ordinary mule. The color is invariably tan or mouse, with black mane and tail. During the cold season their hair is long and soft, but in summer it falls much away. They are sometimes captured by the Tartars, but are reduced with great difficulty to subjection.

Tarpaulin, a cloth of stout canvas, coated with tar or other waterproof compound. Employed on shipboard and ashore for covering hatches, boats, hammocks, etc., and protecting articles generally from the weather

Tarquinius, Lucius, surnamed Priscus (the first or the elder), in Roman tradition the 5th King of Rome. According to Livy he made war with success on the Latins and Sabines, from whom he took numerous towns. Tarquinius also distinguished his reign by the erection of the Cloaca Maxima, the Forum, the wall round the city, and, as is supposed, he commenced the Capitoline Temple. After a reign of about 36 years he was killed by assassins employed by the sons of Ancus Martius in 578 B. C.

Tarquinius, Lucius, surnamed Superbus ("the proud"), the last of the legendary kings of Rome, was the son of Lucius Tarquinius Priscus. Tarquin, on reaching man's estate, murdered his father-in-law, King Servius Tullius (the date usually given for this event is 534 B. C.), and assumed the regal dignity. He abolished the privileges conferred on the plebeians; banished or put to death the senators whom he suspected, never filled up the vacancies in the senate, and rarely consulted that body. He continued the great works of his father and advanced the power of Rome abroad both by wars and alliances. By the marriage of his daughter with Octavius Mamilius of Tusculum, the most powerful of the Latin chiefs, and other political measures, he caused himself to be recognized as the head of the Latin confederacy. After a reign of nearly 25 years a conspiracy broke out by which he and his family were exiled from Rome (510 B. C.), an infamous action of his son Sextus being part of the cause of the outbreak. He tried repeatedly, without success, to regain his power, and at length died in Cumæ in 495 B. C.

Tarr, Ralph Stockman, an American scientist; born in Gloucester, Mass., Jan. 15, 1864; was graduated at the Lawrence Scientific School, Harvard University, in 1891. In 1897 he became Professor of Dynamic Geology and Physical Geography at Cornell University. His publications include: "Economic Geology of the United States," etc.

Tarsus, in anatomy, that part of the foot which in man is popularly known as the ankle, the front of which is called the instep. It corresponds with the wrist of the upper limb or arm and is composed of seven bones.

Tarsus, the ancient capital of Cilicia, and one of the most important cities in Asia Minor; on the Cydnus river; 12 miles from the sea in the midst of a productive plain. It was a great emporium for the traffic carried on between Syria, Egypt, and the central region of Asia Minor. Tarsus, which was sacred to Baal Tars, and is thought by some to have been founded by Sennacherib, 690 B. C., was probably of Assyrian origin, but the first historical mention of it occurs in the "Anabasis" of Xenophon, where it figures as a wealthy and populous city, ruled by a prince tributary to Persia. In the time of Alexander the Great it was governed by a Persian satrap; it next passed under the dominion of the Seleucidæ, and finally became the capital of the Roman province of Cilicia (66 B. C.). Under the early Roman emperors Tarsus was as renowned for its culture as for its commerce, Strabo placing it, in respect to its zeal for learning, above even Athens and Alexandria. The natives were vain and luxurious; a Moslem general estimated their number at 100,000. Weaving goats' hair was the staple manufacture. It was the birthplace of the apostle Paul, who received the greater part of his education there. Gradually, during the confusions that accompanied the decline of the Roman and Byzantine

power, it came into the hands of the Turks, and fell into comparative decay; but even yet this modern, squalid and ruinous city, under the name of Tarso or Tersus, has a permanent population of 7,000, and a pop. of 30,000 in winter, and exports corn, cotton, wool, gall nuts, wax, goats' hair, skins, hides, etc.

Tartan, woolen cloth, cross-barred with stripes of various colors, forming panes, and constituting the peculiar patterns which are said to have formerly distinguished the different Scotch Highland clans, each clan having its own peculiar pattern. The term is also applied to the checkered patterns themselves in which the cloth is woven, and which are frequently printed or painted on various surfaces, as paper, wood, etc.

Tartar, the substance called also argal, or argol, deposited from wines incompletely fermented, and adhering to the sides of the casks in the form of a hard crust. Tartar of the teeth is an earthy-like substance which occasionally concretes on the teeth and is deposited from the saliva. It consists of salivary mucus, animal matter and phosphate of lime.

Tartaric Acid, the most important of vegetable acids, occurs in many fruits, especially the grape. During fermentation the juice of the grape deposits the substance known in commerce as tartar or ergol. This substance, essentially the bitartrate of potash, is hardly soluble in cold water, but may be crystallized by cooling from its solution in boiling water. Thus purified it is known as cream of tartar.

Tartars, or **Tatars,** originally certain Tungusic tribes in Chinese Tartary, but extended to the Mongol, Turkish, and other warriors, who under Genghis Khan and other chiefs were the terror of the European Middle Ages. The term is used loosely for tribes of mixed origin in Tartary, Siberia, and the Russian steppes, including Kazan Tartars, Crim Tartars, Kipchaks, Kalmucks, etc., and has no definite ethnological meaning. In the classification of languages Tartaric is used of the Turkish group.

Tartary, properly Tatary, the name under which, in the Middle Ages, was comprised the whole central belt of Central Asia and Eastern Europe, from the Sea of Japan to the Dnieper, including Manchuria, Mongolia, Chinese Turkestan, Independent Turkestan, the Kalmuck and Kirghiz steppes, and the old khanates of Kazan, Astrakhan, and the Crimea, and even the Cossack countries; and hence arose a distinction of Tartary into European and Asiatic. But latterly the name Tartary had a much more limited signification, including only Chinese Turkestan and Western Turkestan. It took its name from the Tatars or Tartars.

Tashkend, or **Tashkent,** the capital of Russian Turkestan; 300 miles N. E. of Samarcand; on a small river which empties itself into the Syr-Daria or Jaxartes. It consists of an ancient walled city and a new European quarter with broad streets bordered by canals and avenues of trees. The Russian citadel lies a little to the S. There are extensive military stores, official buildings, Russian schools of all grades, an observatory and geographical society, Russian and Kirghiz newspapers, and a brisk trade with Russia and other parts of Central Asia. It is connected with the European system of telegraphs, and has manufactures of silk, leather, felt goods, and coarse porcelain. Once capital of a separate khanate, Tashkend was in 1810 conquered by Khokand, and since 1868 has been Russian. Pop. 156,414.

Tasimeter, an instrument, invented by Edison, for measuring very minute variations of pressure, temperature, moisture, etc. It is founded on the discovery of the inventor that carbon, when pressed in the form of a button, affects the electric currents passing through the same, and offers a resistance which diminishes with the pressure. So sensitive is the carbon that, when this pressure varies to the amount of one millionth part of an inch, the variation in the electric current passing through it will cause a proportional deflection of the galvanometer needle. The practical uses of the instrument are said to be: (1) Warning to vessels of the approach of icebergs, by exposure to the air or to the water cooled by their vicinity; (2) Indicating otherwise inappreci-

able weights; (3) Recording pressures of air in motion, thus affording a useful addition to the anemometer.

Tasmania, formerly Van Diemen's Land, an island in the Southern Ocean, 100 miles S. of Australia, from which it is separated by Bass Strait; greatest length, 186 miles; mean breadth, 165 miles; area, 26,385 square miles; pop. 146,667. The capital is Hobart on the S. coast; pop. 24,905.

The island may be roughly described as heart-shaped. The coasts, which are all much broken and indented, have some excellent harbors. The islands belonging to Tasmania are numerous, the principal being the Furneaux group, on the N. E. extremity. Tasmania is traversed by numerous mountain ranges. The climate is very mild. Mount Wellington is frequently covered with snow in the summer months; but at Hobart, in its immediate vicinity, snow never falls. In December, January, and February, the summer months, during which there is little rain, the average temperature is 62°, extreme 100° to 110. The mean temperature throughout the year is about 55.4°.

Much of the soil of Tasmania is well adapted for cultivation. Wheat, oats, barley, potatoes, peas, beans, and hops are largely cultivated, and the fruit includes grapes, cherries, plums, quinces, mulberries, peaches, apricots, walnuts, filberts, almonds, etc. Fruit-preserving forms an important industry.

Among the minerals are gold, silver, copper, iron, tin, coal, freestone, limestone, and roofing slate. Smelting works have been erected at Hobart for the iron which abounds in that district.

The staple export from Tasmania is wool, and the other articles include gold, tin, timber, grain, fruit, hides, and bark.

The constitution is settled by the Act 18 Victoria (1854), supplemented by acts passed in 1871 and 1885, by which are constituted a legislative council and house of assembly, called the Parliament of Tasmania. The legislative council is composed of 18 members, and the house of assembly of 36 members, the latter being elected for five years. The governor is appointed by the crown, and he has a responsible cabinet of four official members, the colonial secretary, treasurer, attorney-general, and minister of land and works.

Tasmania was discovered in 1642 by Abel Jansen Tasman, who named it after Van Dieman, the governor of the Dutch East Indies. In 1797 Bass discovered the strait which has been called after him. The first settlement was made in 1803 by a guard with a body of convicts, who settled at Restdown, but afterward removed to the site now occupied by Hobart. Till 1824 Tasmania was a dependency of New South Wales, but in that year it was made an independent colony. When gold was discovered in Australia in 1851, a rapid emigration from Tasmania to Australia began to take place. This naturally gave a great check to its prosperity, but for years it has now been fairly prosperous and progressing with moderate rapidity.

Tasso, Torquato, an Italian epic poet, born in Sorrento, Italy, March 11, 1544. At the age of 16 he was sent to the University of Padua to study law, but at this time, to the surprise of his friends, he produced the "Rinaldo," an epic poem in 12 cantos. The reputation of this poem procured for Torquato an invitation to the University of Bologna, which he accepted. Here he displayed an aptitude for philosophy, and began to write his great poem of "Gierusalemme Liberata" (Jerusalem Delivered). He was introduced to the court of Alfonso II. of Ferrara. Here in 1573 he brought out the "Aminta," a pastoral, which was represented at the court. In 1575 he completed his epic of "Gierusalemme Liberata."

About this time he became a prey to morbid fancies, and so outrageous did his conduct become that he was seized and confined as a madman in the hospital of St. Anne at Ferrara. Here he remained from 1579 to 1586, till he was released at the solicitation of Vincent di Gonzaga. Finally, in 1595 he proceeded to Rome at the request of the Pope, who desired him to be crowned with laurel in the capitol, but the poet died on April 25, while the preparations for the ceremony were being made. Tasso wrote numerous poems, but his fame rests

chiefly on his "Rime," or lyrical poems, his "Aminta," and his "Gierusalemme Liberata" (translated into English by Fairfax). His letters also are interesting.

Taste, one of the special senses. The parts of the mouth affected by sapid substances are the surface and sides of the tongue, the roof of the mouth, and the entrance to the pharynx. The mucous membrane is invested by stratified squamous epithelium, which, over the surface of the tongue, covers little vascular projections termed papillæ

Into these trenches Ebner's glands secrete a watery albuminous fluid, keeping them perpetually moist and free from foreign particles. In the epithelium lining these trenches curious little bodies called taste bulbs are lodged; the parts which are probably more especially concerned in taste.

While it is almost certain that these taste bulbs are organs of taste, it is not equally certain that other parts are not involved. The reason for this belief is that in the front and sides of the tongue these taste bulbs are few in number, while in these regions taste sensations are pretty acute. It is therefore not improbable that the nerves which abundantly pass into the epithelium of the tongue end in other ways, but unfortunately we are at present much in the dark concerning their exact method of termination. It is to be noted that the protective layer of the mucous membrane is thin, and might conceivably be permeated readily by the juices of the mouth, which would reach the lower cells into which some of the nerves certainly pass. From the mucous membrane of the mouth the impressions produced by sapid substances are carried probably by fibers belonging to the fifth nerve. These fibers, though they belong to this nerve, are found to run in the greater part of their course in other nerve trunks — viz. the glosso-pharyngeal, to the back of the mouth and tongue, and the chorda tympani to the front of the tongue.

Tatian, a heresiarch of the 2d century, was born in Assyria about 120, and died about 172. He was educated in Greek philosophy; travelled extensively; caused himself to be initiated in the rites of various religions; and eventually embraced Christianity. Tatian became a disciple of Justin, after whose martyrdom he left Rome and journeyed into Mesopotamia, where he preached certain Gnostic and heretical doctrines. He seems to have disbelieved in the divinity of Christ, and his teachings inculcated abstinence from wine, from animal flesh, and from marriage.

Tattie, a screen made of split bamboo placed vertically in doors and windows in India (the window frames being temporarily taken out) while the dry hot wind is blowing during April, May, and June. A native with a pail of water stands outside drenching the mat, so that every interstice has a drop of water. As the dry wind blows into the house through these drops, evaporation takes place with such speed as to cool the wind, which enters the house at a temperature quite refreshing. A single pane of glass is sometimes placed in the window tattie to afford the inmates of the room a small amount of light. When the hot season is succeeded by the rainy season, the tatties are removed, as the wind is already saturated with moisture, and the temperature does not require to be artificially reduced.

Tattnall, Josiah, an American military officer; born in Bonaventura, Ga., in 1762; went to England with his parents who were Loyalists, on the outbreak of the Revolutionary War, but ran away from home in 1770; returned to Georgia, and joined the army under Gen. Nathanael Greene. He was made colonel of militia in 1793 and Brigadier-General in 1800; took an active part in the military affairs in the State; and was United States Senator from Georgia in 1796–1799 and governor of that State in 1800. He died in Nassau, New Providence, June 6, 1803.

Tattnall, Josiah, an American naval officer; born near Savannah, Ga., Nov. 9, 1795. He served in the War of 1812; in the Algerine War; in the West Indies; and in the Mexican War. In 1857 he was appointed flag-officer of the Asiatic station. While in the East he violated the law of neutrality by aiding the British in an attack on a Chinese fort, but in this was sustained by his government.

During the Civil War he was made a captain in the Confederate navy and in 1862 succeeded Franklin Buchanan in command of the "Merrimac." In the same year he destroyed the ship to prevent her falling into the hands of the Federals. He died in Savannah, Ga., June 14, 1871.

Tattooing, the custom of marking the skin with figures of various kinds by means of slight incisions or punctures and a coloring matter. The word itself is Tahitian (ta, "a mark"), but the practice is very widely spread, being universal in the South Sea Islands, and also found among the North and South American Indians, the Dyaks, the Burmese, Chinese, and Japanese, and common

TATTOOED MAORI CHIEF.

enough still among civilized sailors. It is expressely forbidden in Scripture (Lev. xix: 28), from which it is to be concluded that it was common among the ancient nations. Among the Polynesians the operation is attended with circumstances of ceremony, and the figures represented are often religious in signification or symbolic of rank, not seldom the totem or special tribal badge. The New Zealanders were distinguished by elaborate tattooing of the face, and many of their heads are preserved in European museums. As it was formerly a common custom for shipmasters to purchase these on visiting New Zealand there is little doubt that the demand stimulated the supply.

Dr. Wuttke labors to prove that tattooing is a kind of writing, but, whatever may be the case elsewhere, its origin in Japan, where it reached its greatest perfection, is neither ceremonial nor symbolical, but merely cosmetic. Its end is to take the part of a garment or decoration, those parts of the body only being tattooed which are usually covered, and only in the cases of such workmen as runners, grooms, bearers, who work in a half-nude state. Still further, this is found only in large and civilized towns where nudity might have been objectionable. It was a substitute for clothing, but now that clothing is compulsory in Japan it has lost its meaning, and may be expected to disappear. Dr. Baelz, writing in 1885, estimated that a few years before there were in Tokyo alone as many as 30,000 men who were tattooed. The head, neck, hands, and feet are never tattooed, and it is found among the lower classes alone, and very seldom among women, and these only the dissolute.

Among the Ainos again the tattooing is done on the exposed parts of the body, and largely practised by women. The Igorrotos in the mountainous region above Luzon tattoo elaborately, but in series of lines and curves. They ornament the hands, arms, breast, and part of the legs, the back only in one tribe, and a favorite form is a picture of the sun as a number of concentric circles on the back of the hand. According to the Archduke Joseph of Austria, tattooing is unknown among the gypsies, but this is questioned by Bataillard and MacRitchie.

Many savages paint their skins as a means of protection against cold, or against the sun's heat or the bites of insects; others again attempt thus to make their aspect more terrible in war, as Cæsar tells us did the ancient Britons. Tattooing has often been employed as a badge of brotherhood in some cause, and more often still as a means of identification for slaves and criminals. The so-called branding of the letters D. and B. C. on military deserters and incorrigible characters, only given up in 1879, was merely tattooing with needles and India ink. Among the lower-class criminal population in Europe the practice of tatooing is still common, but almost exclusively among males, more than 20

designs being sometimes found on the same individual — transfixed hearts, swords, serpents, flowers, initials, a woman's figure, and occasionally obscenities. Among 800 convicted French soldiers Lacassagne found 40 per cent. tattooed, many with inscriptions which gave an index to the criminal's attitude to the world.

Taurus, in astronomy, the Bull. The second of the zodiacal constellations. It is bounded on the E. by Gemini, on the W. by Aries, on the N. by Perseus and Auriga, and on the S. by Orion and Eridanus. It is

TAURUS.

composed of many small stars, but has a large one (Aldebaran) situated in the midst of a group called the Hyades. They constitute the Bull's forehead and eye. Another group falling within the limits of Taurus is that of the Pleiades. It is situated on the shoulder of the Bull. Taurus contains also the Crab cluster. Also the second sign of the zodiac. The sun enters it about April 22.

Taussig, Edward David, an American naval officer; born in St. Louis, Mo., Nov. 20, 1847; was graduated at the United States Naval Academy in 1867; commissioned lieutenant-commander in 1892; served in various stations in Atlantic and Pacific waters, and in the coast survey; and was appointed commander of the "Bennington" in 1898. He took possession of Waku Island for the United States, was placed in charge of Anam on Feb. 1, 1899; and later, was assigned to duty in the Philippines and in China. He was commander of the ship "Yorktown" in 1900–1901.

Tautog, the blackfish; common on the Atlantic coasts of temperate North America. It attains a size of from 12 to 14 pounds, and brings a high price for the table.

Tautology, the unnecessary repetition of the same thought in different words, as in such a sentence as "The two regiments simultaneously attacked the citidel at the same time." If repetition of the thought is needful for greater lucidity or emphasis, it cannot be condemned as tautological; and there are certain phrases such as "to let and hinder," in which the tautology, originating in the epexegetic addition of the second word, is completely sanctioned by usage. Owing to the number of words whose composition and content are only to be distinctly discovered in the foreign language from which they are borrowed, English lends itself to the vice of tautology more readily perhaps than most other tongues.

Tax, a contribution imposed by authority on people to meet the expenses of government or other public services. (1) A government imposition, or charge made by the State on the income or property of individuals, or on products consumed by them. A tax is said to be direct when it is demanded from the very persons who it is intended or desired should pay it, as a poll tax, income tax, property tax, taxes for keeping dogs, etc. An indirect tax is one demanded from one person, who is expected and intended to recoup or indemnify himself at the expense of another, as customs and excise duties. (2) Any rate or sum imposed on individuals for municipal, county, or other local purposes, as police taxes, taxes for the repairs of roads, bridges, etc., poor tax, drainage tax, etc.

Also a disagreeable or burdensome duty or charge; an oppressive demand or exaction; a requisition; as "This is a heavy tax on his time and strength."

Taxation, the act of imposing a tax or taxes on the subjects of a state or government, or on the members of a corporation or company by the proper authority, for the raising of revenue to meet the expenses of public services; the raising of revenue by means of taxes; the system by which such revenue is raised. Also a tax or assessment imposed; the aggregate of particular taxes.

Taxel, the American badger. The body is of a whitish color, sometimes shaded with gray or tawny. Length, excluding the tail, about 24 inches, tail 6 inches. It abounds on the plains watered by the Missouri, but its S. range is not exactly defined.

Taxidermy, the name given to the art of putting up natural history specimens in the dried state. It includes the skinning and stuffing of fishes, reptiles, amphibians, birds, and mammals; insects and other invertebrata. But it does not properly comprise the making of wet zoölogical preparations which are to be preserved in spirits; nor, strictly speaking, does it include the articulating of skeletons, though this is usually treated of in books on taxidermy.

Taxin, in chemistry, a resinous substance extracted from the leaves of the yew tree by treatment with alcohol containing tartaric acid. It is slightly soluble in water, soluble in alcohol, ether, and dilute acids, and precipitated from acid solutions by alkalies in white bulky flocks.

Taxus, in botany, the yew, the common yew is an evergreen tree which often attains a great size. Specimens of remarkable antiquity are commonly seen in old churchyards. The timber is extremely durable and valuable, and was formerly much used for making bows. Its leaves and young branches act as narcotic-acrid poisons when eaten by man or the lower animals.

Taylor, Archibald Alexander Edward, an American clergyman; born in Springfield, O., Aug. 27, 1834; was graduated at the Princeton College in 1854 and at the Princeton Theological Seminary in 1857; was ordained in the Presbyterian Church; held pastorates in Kentucky, Iowa, and Ohio in 1857–1873; was president of the University of Wooster, O., in 1873–1883; and dean and professor of its post-graduate department in 1884–1887. He became pastor of the Westminster Church, Columbus, O., in 1892.

Taylor, Bayard, an American writer and traveler; born in Kennett Square, Chester co., Pa., Jan. 11, 1825. He learned the trade of a printer; contributed to various magazines; made a journey through Europe on foot in 1844–1845; on his return published "Views Afoot in Europe," and in this way gained a position on the staff of the New York "Tribune." He afterward traveled extensively. He resided in Germany for lengthened periods, was for some time United States secretary of legation at St. Petersburg, and latterly was United States minister to Germany. He died in Berlin, Dec. 19, 1878.

Taylor, Benjamin Franklin, an American author; born in Lowville, N. Y., July 19, 1819. He was for several years connected with the Chicago "Evening Journal." He died in Cleveland, O., Feb. 24, 1887.

Taylor, Charles Jay, an American artist; born in New York city, Aug. 11, 1865; was graduated at the Law Department of Columbia College, and then studied art. Many of his works have been exhibited at the Academy of Fine Arts, Chicago, the Paris Exhibition, etc.

Taylor, George Boardman, an American clergyman; born in Richmond, Va., Dec. 27, 1832; was graduated at Richmond College and the University of Virginia; ordained in the Baptist Church; and served as pastor in Baltimore, Md., and Staunton, Va. In 1873 he was placed in charge of a Baptist mission in Italy.

Taylor, Sir Henry, an English writer; born near Durham, England, Oct. 18, 1800. At the age of 14 he entered the navy; contributed to various periodicals and accepted an appointment in the colonial office, where he remained for nearly 50 years. He died in Bournemouth, March 27, 1886.

Taylor, Henry Clay, an American naval officer; born in Washington, D. C.; was appointed to the navy in September, 1860; promoted ensign in May, 1863, and attached to the "Shenandoah" where he continued to serve till 1864, when he was assigned

to special service in the "Iroquois." In November, 1893, was appointed president of the Naval War College in Newport, R. I.; and on April 16, 1894, was promoted captain. Later he was made commander of the battleship "Indiana," in which capacity he took part in the destruction of Cervera's fleet. After the war he was appointed commander of the receiving ship "Vermont."

Taylor, Horace A., an American financier; born in Norfolk, N. Y., May 24, 1831; moved to Wisconsin in 1847, and there engaged in newspaper work, banking and lumbering. He was United States consul to France; a member of the Wisconsin Senate; United States railroad commissioner; and one of the commissioners of the World's Columbian Exposition at Chicago. He was promoted assistant secretary of the United States treasury in 1897.

Taylor, James Edward, an American artist; born in Cincinnati, O., Dec. 12, 1839; studied at the University of Notre Dame, South Bend, Ind. He early manifested a marked taste for drawing and painting; and just after finishing his education produced a panorama of the American Revolution. In 1860 he began the study of art; but when the Civil War broke out he entered the army with the 10th New York Regiment. During his spare time in the army he made numerous sketches of camp life. In 1863 he became artist and war correspondent for Frank Leslie. In 1867 he was sent as artist with the Peace Commission to the Indians. He also accompanied President Grant's Commission to Santo Domingo. He retired from "Leslie's Illustrated Newspaper" in 1883, after which he devoted himself to painting. One of his best known works is "The Last Grand Review," made for General Sherman. Four other paintings are in the Congressional Library in Washington, D. C. He died in New York city, June 22, 1901.

Taylor, Jeremy, "the modern Chrysostom"; born in Cambridge, England. He studied at Caius College, and took his degree of M. A. in 1633. Shortly after he was admitted to holy orders. In 1638 he was appointed rector of Uppingham in Rutlandshire. In the civil war, Taylor took the royal side, and so lost all his preferments. For many years he lived in retirement in Wales, busily engaged in writing books. In 1658 he went, on the invitation of the Earl of Conway, to Ireland. Immediately after the Restoration he was made Bishop of Down and Connor, which see, as also that of Dromore, he held till his death at Lisburne, Aug. 13, 1667.

Taylor, John, styled by himself "The King's Majesty's Water-Poet"; born in Gloucester, England, in August, 1580. After serving in 16 voyages, having been with Essex at Cadiz and the Azores, he began to ply as a waterman on the Thames. He was chiefly distinguished by the performance of several fantastic feats of rowing. The memorable incident of his life, however, was his traveling on foot from London to Edinburgh, "not carrying any money to or fro, neither begging, borrowing, or asking meat, drink, or lodging." He set out on July 14, 1618, and reached Edinburgh on Aug. 13. In 1630 Taylor published "All the Works of J. T., being Sixty and Three in Number," but before his death in 1654 he had produced 138 separate publications.

Taylor, John, an American Mormon; born in Winthrop, Westmoreland, England, Nov. 1, 1808; went to Toronto, Canada, in 1832, and was there converted to Mormonism. In 1838 he was made an "apostle" and settled in Missouri. For 10 years he preached his faith in France and England, but returned to the United States in 1852. He was with Joseph Smith when the latter was killed, and was himself shot four times. When Utah applied for admission to the Union he represented that territory in Congress, and on the death of Brigham Young was elected president of the Mormon Church. In 1885 he was indicted for polygamy, and in order to avoid arrest was forced to exile himself. He died July 25, 1887.

Taylor, John Louis, an American jurist; born in London, England, March 1, 1769; came to the United States in 1781; was educated at William and Mary College; and removed to Fayetteville, N. C., where he was admitted to the bar. He was a member of the Legislature; elected judge of the Superior Court in 1798; and be-

came chief justice in 1808. In 1817 he was appointed a commissioner to revise the statute laws of North Carolina; and in 1818 one of the judges of the newly established court, where he served till his death in Raleigh, N. C., Jan. 29, 1829.

Taylor, Marshall William, an American clergyman; born in Louisville, Ky., July 1, 1846; became a teacher in Hardinsburg, Ky., under the Freedman's Bureau in 1867; entered the ministry of the Methodist Episcopal Church in Kentucky in 1870; delegate to the Ecumenical Methodist Conference in London in 1881; was editor of the "Southwestern Christian Advocate" in 1884. He died in Louisville, Ky., Sept. 11, 1887.

Taylor, Nathaniel William, an American clergyman; born in New Milford, Conn., June 23, 1786; studied at Yale; became pastor of a Congregational church at New Haven in 1812; and Professor of Theology in Yale College in 1822. He died in New Haven, Conn., March 10, 1858.

Taylor, Richard, an American military officer; born in New Orleans, La., Jan. 27, 1826; was graduated at Yale College in 1845; and entered the Mexican War with his father, Zachary Taylor. In 1861 he became colonel in the Confederate army. He was made a Brigadier-General in October, 1861; served under "Stonewall" Jackson in Virginia; was promoted Major-General; and in 1863–1864 served in the Trans-Mississippi Department. Afterward he was in command at Mobile. He died in New York city April 12, 1879.

Taylor, Thomas, an American scientist; born in Perth, Scotland, April 22, 1820; was educated at the Andersonian University in Glasgow, Scotland. He invented the first interleaved electrical condenser in 1841; a pneumatic battery for igniting explosives in 1850; a safety lamp for coal miners; and in 1851 came to the United States and demonstrated that electricity could be transmitted across the sea without wires. He became connected with the Ordnance Department of the army.

Taylor, Tom, an English dramatist; born in Sunderland, in 1817. He received his education at Glasgow University and Trinity College, Cambridge; became professor for two years in University College, London; was called to the bar; wrote and adapted for the stage a great number of plays; was editor of "Punch." He died in Wandsworth, England, July 12, 1880.

Taylor, William, an American clergyman; born in Rockbridge co., Va., May 2, 1821; was a member of the Baltimore Conference in 1843; in 1849 was sent by the Missionary Society of the Methodist Episcopal Church to San Francisco where he labored till 1856, when he started on an evangelistic tour through Canada and the Eastern States. In 1862 he went abroad to continue his work. In 1872 he started the self-supporting missions in Bombay, and later engaged in similar work in Africa, of which he was made missionary bishop in 1884. He was relieved of his charge in Africa in 1896. Died May 18, 1902.

Taylor, William Bower, an American physicist; born in Philadelphia, Pa., May 23, 1821; was graduated at the University of Pennsylvania in 1840; admitted to the Philadelphia bar in 1844; and later studied civil engineering. He was examiner in the United States patent office in 1854–1877; and editor of the publications of the Smithsonian Institution after 1878. Died in 1895.

Taylor, William George Langworthy, an American educator; born in New York city May 13, 1859; was graduated at Harvard University in 1880, and at its Law Department in 1883. In 1893 was made Professor of Economics at the University of Nebraska.

Taylor, Zachary, an American statesman, 12th President of the United States; born in Orange co., Va., Sept. 24, 1785. He was the son of a Virginia colonel, who served in the Revolutionary War. The family removed to Kentucky in 1785. In 1808 he was appointed a lieutenant of infantry, and in 1810 promoted to captain. In 1812 he was appointed to the command of Fort Harrison, near the present city of Terre Haute, Ind., which he defended with his troops from the attack of a large force of Indians, for which he was brevetted major. He served in the Black Hawk

War of 1832, and in 1837 was given full command in Florida, where he defeated the Indians in the battle of Okechobee, thereby putting an end to the Indian War. In 1840 he was given command in the Southwest. When Texas was annexed, he marched to Corpus Christi. In 1846 he was ordered to the Rio Grande, the Mexican invasion having been already planned. He established a camp opposite Matamoras. The Mexicans claimed that the Neuces was the actual Texas boundary, and the Mexican commander ordered Taylor to withdraw. Acting under orders from his government, he refused. Fearing his base of supplies at Point Isabel would be cut off, Taylor marched for that place. On the way he was attacked, and won the two victories of Palo Alto and Resaca de la Palma, on two successive days. Having been ordered to send his best troops to reinforce General Scott, he won the victory of Buena Vista, nevertheless, in 1847, with a force much inferior to the enemy's. In 1848 he was nominated by the Whig Convention for the presidency, and was elected. Inaugurated on March 4, 1849, he died in Washington, D. C., July 9, 1850.

Taylor University, a coeducational institution in Upland, Ind.; founded in 1893 under the auspices of the Methodist Episcopal Church.

Tayra, in zoölogy, a small carnivorous mammal, about the size of a marten, from tropical America. It is easily tamed, and becomes a lively and amusing pet in captivity.

Tchad, Chad, or **Tsad, Lake,** a large fresh-water lake of Central Africa, in the Sudan, having the territories of Bornu, Kanem, and Bagirmi surrounding it; length, about 150 miles; breadth, about 100 miles; area, about 20,000 square miles, with a variable expanse according as it is the wet or dry season.

TEA PLANT, FRUIT AND FLOWER.

Tchernozem, the name for a black soil in Russia of extraordinary fertility, covering at least 100,000,000 acres, from the Carpathians to the Ural Mountains, to the depth of from 4 to 20 feet.

Tea, the dried leaf of an evergreen shrub of the natural order Ternstrœmiaceæ. It includes the China plant, and the indigenous Assam plant. At one time it was supposed that two Chinese species were grown of which one furnished the black tea and the other the green tea of commerce, but further research has shown that these species cannot be maintained. Whether the tea shrub is indigenous in China and

Japan is a doubtful question. The fact has been historically established that the culture of tea existed in China in the 4th century, and in Japan in the 9th century, and from these countries it was exclusively obtained for any other part of the globe till the the time of the present generation.

The discovery of the indigenous plant in the forest country of Upper Assam was made in 1834, and since 1840 its cultivation there has taken very firm root.

Teak, one of the most valuable timbers known; the wood of a large deciduous tree, with leaves from 10 to 20 inches in length, and from 8 to 15 inches in breadth. The tree, which has small white flowers in panicles, is found in Central and Southern India. There are extensive forests of it in Burma and Siam, and it extends into Java and some neighboring islands. The wood is of a quiet yellow color, tending to brown, and like many other kinds of timber has a characteristic odor. It is classed as a hardwood, though it is only of medium hardness, taking, however, a good polish; and it is straight grained and strong.

Teal, a popular name for any individual of the duck family. They are the smallest of the ducks, and widely distributed over the world, generally frequenting rivers and lakes, and feeding, principally at night, on aquatic insects, worms, small mollusks and vegetable matter.

Tears, usually pure water, with saline traces; but in cases of poisoning may show the poison, and in diabetes become saccharine like the other secretions. Serving normally to moisten eyeballs, interior eyelids, and nose, they are regularly secreted in normal quantities, and disappear by the duct into the nose. In man they are also the natural outlets of strong emotion, and are secreted in greatly increased quantity; they much more constantly accompany crises of fear, anxiety, grief, affection, and keen joy than physical pain. Old age is comparatively tearless.

Teasel, in botany, the genus Dipsacus. About 150 species are known, natives of the temperate parts of the Old World and of America. The only valuable species of the order is fuller's teasel. The crooked awns are fixed around the circumference of large broad wheels or cylinders, and woolen cloth is held against them. They raise a nap on it which is afterward cut level. A piece of fine broadcloth requires 1,500 or 2,000 of them to bring out the nap, after which the teasels are broken and useless. Steel substitutes for teasels have been tried, but ineffectually; they are not sufficiently pliant.

Technology, the science which treats of the arts, more particularly the mechanical. It is properly the science of the arts.

Technology, Schools of, institutions for the training of students in the industrial arts and exact sciences; chiefly civil, electrical, mining, and mechanical engineering.

Tecumseh, an American Indian; born near Springfield, O., about 1768; first appeared in a fight with Kentucky troops on Mad river in 1788. In 1805, with his brother, Ellskwatawa, he projected the union of all the Western Indians against the whites. His defeat in the battle of Tippecanoe ruined these plans, but he continued his efforts among the Southern tribes, and ultimately succeeded in inciting the Creek Nation to insurrection. He then joined the English, and commanded the Indian allies in the campaigns of 1812-1813. He was in the action of Raisin river, and after being wounded at Maguaga was made a Brigadier-General in the royal army. He led 2,000 warriors in the siege of Fort Meigs, where he saved the American prisoners from massacre; and commanded the right wing under General Proctor in the battle of the Thames, Canada, where his Indians were driven back and he himself killed Oct. 5, 1813.

Tecumseh, The, a single-turreted, ironclad monitor of the United States navy. During the Civil War, under the command of Captain Craven, it formed a part of Admiral Farragut's fleet in the attack on Mobile, Ala., and was sunk by a torpedo in Mobile Bay, Aug. 5, 1864.

Te Deum ("Te Deum laudamus," "We praise thee, O God"), a well-known Latin hymn of the Western Church. The hymn is one of the most simple, and at the same time the

most solemn and majestic, in the whole range of Latin hymnology. Its authorship is uncertain.

Tegea, a city of Arcadia, in ancient Greece. It took part in the battle of Platæa in 479 B. C.; was on the side of Sparta in the Peloponnesian and Corinthian wars, but opposed her at the battle of Mantinea in 362 B. C.; and joined the Arcadian Confederacy and Ætolian and Archæan Leagues.

Teheran, or **Tehran,** the capital of Persia; 70 miles S. of the shore of the Caspian Sea. The old wall and ditch were leveled in 1868, and the space gained made into a boulevard. Fortifications, consisting of a bastioned rampart and ditch, were at the same time commenced on a much more extended scale. This wall, with its 12 gates and enclosing an area about 10 miles in circumference, was completed in 1873. The town rapidly extended beyond its old limits. The Shah's palace occupies the citadel. Besides his town palace, the Shah has five others in the immediate neighborhood. The bazaars, some of which are very handsome structures, are filled with every kind of native and foreign merchandise. From Teheran lines of telegraph radiate in almost every direction to the extremities of the kingdom. In 1886 a short line of railway was constructed from Teheran to Shah Abdul Azim, a shrine and place of pilgrimage about 6 miles S. of the town. Pop. estimated at 210,000.

Teinds, the name given in Scotland to tithes or the proportion of the annual produce of the earth devoted to the maintenance of the clergy.

Telautograph, an instrument which will at any distance transmit accurately and to the smallest detail in exact facsimile anything that may be written or drawn on the transmitting device.

Telediagraph, The, an apparatus by which pictures can be reproduced by telegraph at long distances. It was used for the first time in January, 1898, in the New York "Herald" office, when a picture of Mayor Van Wyck was sent over a 6-mile circuit. Later pictures were sent to the "Herald" from Camden, N. J., and Key West, Fla. In the early part of 1899 a picture of the first gun fired at Manila was telegraphed from New York to Chicago, St. Louis, Philadelphia, and Boston simultaneously over a single wire.

Teledu, in zoölogy, the stinking badger; a small, nocturnal, burrowing mammal, found only in Java and Sumatra. Like the skunk, it has the power of ejecting an intensely fetid liquid from its anal glands.

Telegraph, an apparatus or process for the rapid communication of intelligence between distant points. The invention of the electric telegraph is due to Samuel F. B. Morse, who, in 1832, during a homeward voyage from France to New York, conceived the idea of writing on a distant strip of moving paper by means of a pencil worked by an electro-magnet and a single conducting circuit, and who in 1844 completed the first line between Washington and Baltimore. The invention of the Leyden jar, and the discovery of the fact that the earth and intervening bodies of water may be employed as part of an electric circuit, were among the most important steps which gradually led to the completion of the present system of telegraphy. More than half of the telegraph lines of the world are in America. See Wireless Telegraph.

Teleiconograph, a combination of the telescope and camera. The principle is that of allowing the image transmitted by the object glass of a telescope to pass through a prism connected with the eye piece. The rays of light that would in the ordinary use of the telescope be transmitted direct to the eye are refracted by the prism, and thrown down on a table placed below the eye piece.

Tel-el-Amarna, or **Tell-el-Amarna,** the modern name of a mass of ruins a little to the N. of Assiout, on the E. bank of the Nile, representing the capital of the heretic Egyptian king Amenhotep IV. Here was found in 1887 a collection of tablets in Babylonian cuneiform, at a period some time before the exodus of the Israelites out of Egypt. These tablets were mainly reports from Egyptian governors of Palestine, Syria, Mesopotamia, and Babylonia, some of which implored help against the Hittites.

Telelectroscope, an electrical apparatus for transmitting over a wire and reproducing at a distance images of objects in their natural colors.

Telemachus, in mythology, the son of Ulysses and Penelope; was an infant when his father left home to join in the war against Troy; but during his 20 years' absence grew into manhood. Under the guidance of Athene, who had assumed the appearance of Mentor, Telemachus set out in search of his long-lost sire, after having vainly endeavored to eject his mother's troublesome suitors from the house. Having visited Pylos and Sparta, Telemachus returned home to Ithaca, where he found his father in the guise of a beggar, and with him proceeded to slay the suitors.

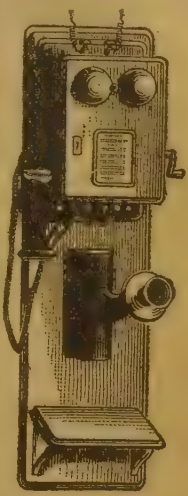
Telemicrophone, a combined apparatus simultaneously producing the effects of the microphone and the telephone, and reversible like the latter.

Teleology, in philosophy, a branch of metaphysics; the doctrine of final causes and of the uses which every part of nature was designed to subserve; the argument from design in proof of the existence of God.

Teleosaurus, a genus of fossil crocodiles, the remains of which occur in the lower Jurassic rocks. They are found associated with marine fossils, and the peculiar modification of their skeleton seems to have specially fitted them for an aquatic life.

Telepathy, the power of communication between one mind and another by means unknown to the ordinary sense organs.

Telephone, an instrument for transmitting sounds or speech to distances where such would be inaudible through aerial waves. The true inventor was undoubtedly Philip Reis, who showed, in 1861, that variations in an electric current caused by a vibrating membrane could reproduce the necessary vibrations. Reis transmitted musical sounds and even words; but his apparatus was imperfect, and it was reserved for Alexander Graham Bell to perfect that which is still commonly used and known as the Bell telephone. In 1892 a long-distance telephone was erected between Chicago and the larger E. cities and has since been in successful operation. In 1902 a patent was sought in the United States for a wireless telephone service, which the inventor claimed was equally practicable under water and on land. A most important invention has been made by Dr. Michael I. Pupin of Columbia University, New York, whereby the telephone, overland or submarine, may be used over a distance of 3,000 miles. By applying the invention to a telephone line a man in New York may talk with a man in San Francisco; and, by applying it to a submarine cable, a conversation may be held between New York and London. The invention is so simple that it seems incredible. The device consists of putting coils of wire at certain intervals about the wire which transmits the waves of sound. This device makes a difference in the vibrations and preserves them a greater distance.



RECEIVER AND TRANSMITTER.

Telephotograph, The Rapid, officially called "rapid telegraph," an invention which transmits as many as 160,000 words per hour on a single wire if the voltage and resistance of the line be sufficient, and to obtain telegrams in ordinary handwriting instead of in a variation of the Morse alphabet. The apparatus, though looking rather complicated, is a marvel of simplicity in construction and handling. The chief advantages are an enormous speed on wires with very low voltage currents, a permanent and clearly legible automatic record in usual handwriting, automatic control of the receiver from the sending station, transmission from perforated paper and automatic receiving by photographing the movements of telephones' diaphragms (membranes).

Telephote, an instrument for transmitting to a distance images of objects by the agency of electricity acting on selenium. It was invented in London in 1891 and was first used in the United States in 1892.

Telescope, an optical instrument to assist the naked eye in examining distant objects, by magnifying the apparent angular dimensions of the object, and by collecting more light than the pupil of the eye could alone do to form the image on the retina.

Telescope Fish, or **Telescope Carp,** in ichthyology, the most highly-prized of the many varieties of the goldfish.

Telescopium, one of the 14 S. constellations added to the heavens by Lacaille in connection with his work at the Cape of Good Hope. It is not a conspicuous constellation, its brightest star being of 3.5 magnitude.

Telescriptor, The, a long-distance typewriter. This instrument is formed on the order of a typewriter, but furnished with an electric current under each key so that when a key is depressed at one end of the wire instantaneous currents can be sent to any distance. The operator strikes the keys exactly as if he were writing on a typewriter, and the words come out on a strip of paper that unrolls before him, while at the same time the message is being written before the eyes of the man at the other end of the line. The peculiar value of the "telescriptor" is that it leaves a printed record of communication both with the sender and the receiver.

Telespectroscope, in optics, an instrument for observing the light from the planets and fixed stars, for ascertaining their physical condition and the composition of their atmospheres.

Telestereoscope, an instrument for producing an appearance of relief in the objects of a landscape at moderate distances. It consists of a frame on which are set at a convenient distance apart two plane mirrors at an angle of 45°, which receive the rays of light from the objects; these are reflected to two central mirrors, forming an angle of 45° with the first, in which they are viewed by the eye. The effect produced is the same as if the eyes of the observer were at the same distance apart as the two larger mirrors.

Telford, Thomas, a Scotch engineer; born in Westerkirk, Scotland, Aug. 9, 1757; became a mason and worked at his trade in Edinburgh. Going to London he exchanged his original occupation for that of civil engineer. The parliamentary commissioners for making roads and building bridges in the Highlands of Scotland, and also those for making the Caledonian canal, appointed Telford their engineer. He superintended the construction of five large bridges over the Severn. The greatest monument of his engineering skill was the Menai Suspension bridge, connecting Caernarvonshire with the Island of Anglesea, opened in 1826. He died in Westminster, Sept. 2, 1834.

Tell, William, the champion of Swiss liberty; was a native of Burglen, in the canton of Uri. He was distinguished by his skill in archery, his strength and courage. He joined the league of the Three Forest cantons formed to free the country from Austrian tyranny. The Austrian governor of Switzerland, Herman Gessler, pushed his insolence so far as to require the Swiss to uncover their heads before his hat, and is said to have condemned Tell, who refused to comply with this mandate, to shoot an apple from the head of his own son. Tell was successful, but confessed that a second arrow, which he bore about his person, was intended, in case he had failed, for the punishment of the tyrant, and he was therefore retained prisoner. While crossing the Lake of the Four Cantons, or Lake of Lucerne, in the same boat with Gessler, a violent storm arose. Tell, as the most vigorous and skillful helmsman, was set free, and he conducted the boat successfully to the shore, but seized the opportunity to spring on a rock, at the same time pushing off the boat. On this rock, since called the Rock of Tell, a commemorative monument or chapel has been erected. When the governor finally escaped the storm, and reached the shore, Tell fatally shot him. This event was the signal for a general rising, and a most obstinate war between the Swiss and Austrians,

which was not brought to a close till 1499.

Teller, Henry Moore, an American statesman; born in Granger, N. Y., May 23, 1830; was admitted to the bar in 1856; practiced law in Illinois; went to Colorado in 1861; was Major-General of the Colorado militia; United States Senator; Secretary of the Interior in President Arthur's Cabinet. He was again elected to the United States Senate in 1897.

Tellurion, an apparatus for the purpose of illustrating to the eye the real and apparent movements of the earth.

Telpher Line, in electricity, a line on which transportation is automatically effected by the aid of electricity. It is composed of two sets of steel rails, supported on wooden T-shaped posts. A wire is supported on each end of the cross-piece of the T. The carriers are of iron, furnished with handles by which their contents are tilted over by a man with a pole, or automatically tilted by these handles coming successively into contact with a wooden arm standing out from the post where it is desired they should be emptied. The great practical advantage of a telpher line is that it can be carried through a district without any interference with the fields, rivers, or roads, that cutting and tunneling are not necessary, and that no ground has to be purchased, as for ordinary railways.

Telugu, or **Telinga,** one of the languages of India, belonging to the Dravidian group, and spoken in Southern India by about 17,000,000 people.

Temperament, that individual peculiarity of physical organization by which the manner of acting, feeling, and thinking of each person is permanently affected.

Temperance Movement, a movement designed to minimize or to abolish the use of alcoholic liquors as beverages. The first total abstinence pledge was drafted by Micaiah Pendleton of Virginia. Not, however, till 1836 was the American Temperance Union formed on the basis of total abstinence. In 1840 the Washingtonians were founded in the city of Baltimore, and in 1842 the Sons of Temperance were instituted in New York city. From 1845 commenced the various orders with ritual and insignia, which have gradually been extended to or imitated in Europe. In 1838 Father Theobald Mathew became the apostle of temperance for Ireland, and by the end of 1839 obtained 1,800,000 recruits to the cause. In 1868 the Independent Order of Good Templars, probably the most widespread of all temperance organizations, was planted in England by Joseph Malins. The feeling in favor of temperance is steadily growing, and the numerous societies with their large membership constitute a very potent social and political force.

The National Woman's Christian Temperance Union, with its auxiliary state and territorial unions, besides that of the District of Columbia, is the largest society ever composed exclusively of women and conducted entirely by them. It has been organized in every State and Territory of the nation, and locally in about 10,000 towns and cities. Great Britain, Canada and Australia, Hawaiian Islands, New Zealand, India and Japan, Madagascar and South Africa, have also organized, and there are local unions in almost every civilized nation.

Temperature, the thermal condition of a body which determines the interchange of heat between it and other bodies. Our first ideas of temperature are derived from our sensations of hot and cold. The effect of adding heat to a body is to make it hotter, unless it is at its melting or boiling point. In meteorology the distribution of atmospheric temperature is one of the most important problems calling for discussion.

Temperature of the Body. The terms cold-blooded and warm-blooded animals serve roughly to indicate, the former, those animals which possess a temperature little raised above that of the surrounding medium; the latter, those with one considerably higher. Fishes, frogs, and reptiles are cold-blooded animals, while birds and quadrupeds are warm-blooded. The circumstances which influence the temperature of the human body in health are varied. The normal temperature of the internal parts varies from

98.5 to 99.5. The average temperature of the armpit is 98.6. In infant life the temperature is about 1° F. above that of the adult; and the temperature of old age resembles that of infancy. The temperature of the female slightly exceeds that of the male; and the temperature of the human body falls to its lowest level in the early morning.

Tempering, in metal work, the process of producing in a metal, particularly steel, that peculiar degree of hardness and elasticity which adapts it for any of the purposes to which it is to be applied.

Templars, a famous military order, which owed its origin to the Crusades. In the year 1119 two comrades of Godfrey de Bouillon, Hugues de Payen and Geoffroi de Saint-Adhemar, bound themselves and seven other French knights to guard pilgrims to the holy places from the attacks of the Saracens, taking before the patriarch of Jerusalem solemn vows of chastity, poverty, and obedience. King Baldwin II. gave them for quarters part of his palace, which was built on the site of the Temple of Solomon close to the Church of the Holy Sepulcher. Hence they took their name as Templars, and the houses of the order that of the Temple. At the Council of Troyes (1128) Bernard of Clairvaux drew up its rule in 72 statutes, substantially the groundwork of the statutes as finally revised in the middle of the 13th century. The order at first consisted of knights alone, but later its members were grouped as knights, all of noble birth, chaplains, and men-at-arms, besides mercenaries, retainers, and craftsmen affiliated, and enjoying its protection. The knights took the vows for life or for a certain period, and they alone wore the white linen mantle, with the eight-pointed red cross on the left shoulder, and white linen girdle; black or brown garments were worn by all others. The seal of the order showed the Temple, later two riders — a Templar and a helpless pilgrim — on one horse.

The discipline of the order was austere, excluding all needless luxury or display in food, dress, or armor, and all worldly pleasures were forbidden. Married brethren were admitted, but no women might enter the order, and all brethren were enjoined to shun the kiss of a woman. The beard was worn, the hair cut short, and all slept alone in shirt and breeches, with a light constantly burning. At the head of the whole order stood the Grand-master; under him Masters, Grand Priors, Commanders, or Preceptors ruled the various provinces. Second in command to the Grand-Master stood the Seneschal, his deputy; next the Marshal, whose business, moreover, was to provide arms, horses, and all the material of war. Visitors-general conveyed the commands of the Grand-master and convent or chapter of Jerusalem to the various provinces, exercised discipline, and settled disputes. The Prior or Preceptor of the kingdom of Jerusalem, also styled Grand-preceptor of the Temple, was also general treasurer of the order. The Templars were by a papal bull in 1172 rendered independent of the authority of the bishops, owning allegiance to the Pope alone, the immediate bishop of the entire order. It was their proud boast that 20,000 of their number perished for the cause in Palestine; of their 22 Grand-masters seven died on the field of battle, five of their wounds, one of voluntary starvation a prisoner in the hands of Saladin. The most famous successors of Hugues de Payen (died 1136) were Bernard de Tremelai, who fell at Ascalon in 1153; Eudes de Saint-Amand (died 1179), Gerard de Riderfort, who died in battle under the walls of Acre in 1189; Robert de Sable, who aided Richard Cœur de Lion to gain a glorious victory in the plain of Arsouf (1191), and bought from him the island of Cyprus, which was soon transferred to Guy de Lusignan, whereupon Acre became the seat of the order, the famous stronghold of Pilgrim's Castle being built, whose stupendous ruins exist to this day; Peter de Montaigu, whose courage helped to take Damietta in 1219; Hermann de Perigord, who rebuilt the fortress of Safed; Guillaume de Sonnac, slain beside St. Louis at the Nile in 1250; Thomas Berard, under whom Safed was lost in 1266, Jaffa and Antioch in 1268; and Guillaume de Beaujeu, fell in the bloody capture of Acre in 1291. The remnant of the Templars sailed to Cyprus, and the

latest dying gleams of the order's vigor in the East were the attempts to capture Alexandria (1300), and to establish a settlement at Tortosa (1300–1302) under the last and most ill-fated of its grand-masters.

The Templars had failed in their work; their usefulness was past; the order had now only to sink into extinction in one of the darkest tragedies of history. The Grand-master Jacques de Molay, was summoned from Cyprus by the Pope in 1306; he went taking with him the treasure of the order, and awaited his fate in France. On Oct. 13, 1307, the Grand-master and 140 Templars were seized at the Temple and flung into prison. Two degraded Templars supplied some of the charges Philip required; tortures, infamous beyond the infamies of the Inquisition, provided the remainder. In August, 1308, Clement sent throughout Christendom the 127 articles of interrogation for the accused, and evidence in detail, self-contradictory beyond all parallel, was quickly accumulated.

On May 12, 1310, 54 knights were slowly burned to death. The Pope laid the order under perpetual inhibition, and transferred its property to the Hospital of St. John of Jerusalem.

Temple, an edifice erected and dedicated to the service of some deity or deities, and connected with some system of worship. The term is generally applied to such structures among the Greeks, Romans, Egyptians, and other ancient nations. It is also an edifice erected among Christians as a place of public worship; a church.

Temple, Solomon's, the building reared by Solomon as a habitation for Jehovah. David had planned the Temple, but was divinely forbidden to erect it, as he had shed so much blood in his wars. He made great preparations for his son and successor, who, we learned from the prophet Nathan, was destined to achieve the work. It was built on Mount Moriah, chiefly by Tyrian workmen, and had massive foundations. The stone for its erection was dressed before its arrival, so that the edifice arose noiselessly; the floor was of cedar, boarded over with planks of fir; the wainscoting was of cedar, covered with gold, as was the whole interior. It was modeled inside on the tabernacle, which was Jehovah's dwelling while journeyings were continually taking place. There was a Holy and Most Holy Place. The Temple was surrounded by an inner court for the priest. There was also a Great or Outward Court, called specially the Court of the Lord's House. This temple was destroyed by the Babylonians during the siege of Jerusalem under Nebuchadnezzar. On the return from Babylon, a temple, far inferior to Solomon's, was commenced under Zerubbabel, B. C. 534, and, after a long intermission, was resumed B. C. 520, and completed B. C. 516, under Darius Hystaspes. The second temple was gradually removed by Herod, as he proceeded with the building or rebuilding of a temple designed to rival the first rather than the second. The work was commenced B. C. 21 or 20; the temple itself was finished in about a year and a half, the courts in eight years, but the subsequent operations were carried on so dilatorily that the Jews reckoned 46 years as the whole time consumed. In the courts of this temple Jesus preached and healed the sick. It caught fire during the siege of Jerusalem under Titus, and was burned to the ground.

Temple, Oliver Perry, an American lawyer; born in Green co., Tenn., Jan. 27, 1820; was graduated at Washington College, Tenn., in 1844, and was admitted to the bar in 1846. President Fillmore made him a commissioner to visit the Indian tribes of New Mexico, Arizona, and California in 1850. Prior to and during the Civil War he was one of the Union leaders in Eastern Tennessee. He was chancellor of Tennessee in 1866–1878; retired from practice in 1881.

Temple, Sir William, an English statesman; born in London, in 1628; was educated at Emanuel College, Cambridge. After the Restoration (1660) he was nominated one of the commissioners from the Irish Parliament to the king. In conjunction with DeWitt he concluded the treaty between England, Holland, and Sweden (Triple Alliance, 1668). He attended, as ambassador extraordinary, when peace was concluded between France and Spain at Aix-la-Chapelle in 1668, and subsequent to that time re-

siding at The Hague as ambassador, became familiar with the Prince of Orange, afterward William III. Recalled in 1669, remained in retirement till 1674, when he was again ambassador to the States-General (1679). He was instrumental in promoting the marriage of the Prince of Orange with Mary, eldest daughter of the Duke of York (James II., 1677). Shortly after his return he was elected to Parliament. In 1681 he retired from public life altogether. He died in Moor Park, Surrey, Jan. 27, 1699.

Temple, William Greenville, an American naval officer; born in Rutland, Vt., March 23, 1824; was graduated at the United States Naval Academy in 1846; entered the navy as midshipman in 1840; served with distinction in the Mexican War. He was on duty at the United States Naval Observatory in 1848; engaged in surveying the Florida reefs and the Gulf stream in 1848–1850; had charge of the surveys and hydrographic work for the projected canal and railroad across the Isthmus of Tehuantepec in 1850–1852; and was on coast survey duty in 1852–1859. He was promoted master in 1854, and lieutenant in 1855. He served throughout the Civil War. He was promoted commander in 1865, captain in 1870, commodore in 1878, and rear-admiral Feb. 22, 1884, and was retired the following week. He died in Washington, D. C., June 28, 1894.

Temple Society, a body of German Christians who wait for the second coming of Christ.

Templet, a pattern whose edge is dressed and shaped to the required conformation, and is laid against the object made so as to test its conformities thereto.

Temporal Power, the power which the Pope exercised as sovereign of the States of the Church. Pius VII. was partially deprived of his dominions by Napoleon I. in 1797, and entirely in 1808. The Pope replied by a bull of excommunication; he was then arrested and kept a close prisoner in France till the fall of Napoleon in 1814, when he was reinstated in the government of an undiminished territory. In 1870 Victor Emmanuel, King of Italy, took possession of the papal territory, leaving to the Pope only the Vatican.

Temporary Star, a star appearing for a time, and then gradually vanishing away. In November, 1572, a star burst out in Cassiopeia with a brilliancy greater than that of any one near it. It rapidly increased in magnitude till it became visible at noon. Then it diminished in size, and in March, 1574, became invisible to the naked eye, nor has it been seen since.

Tenacity, that property of materia bodies by which they are able to resist a severe strain without rupturing or splitting.

Tenail, or **Tenaille,** in fortifica tion, an outwork or rampart raised in the main ditch immediately in front of the curtain between two bastions.

Tenant, in law, one who occupies or has temporary possession of lands or tenements, the titles of which are in another, the landlord.

Tench, the sole species of a fish found all over Europe in stagnant waters with soft bottom. Like most other carps it passes the winter in a torpid state, concealed in the mud.

Tender, in law, an offer of money or other thing in satisfaction of a debt or liability. Legal tender, coin or paper money, which, so far as regards the nature and quality thereof, a creditor may be compelled to accept in satisfaction of his debt. In this country gold and silver coin are a legal tender to any amount, so far as a debt admits of being paid in gold or silver; and national treasury notes or greenbacks are also legal tender.

Tender, a small vessel appointed to attend a larger one, and employed for her service in procuring stores, etc. In railways a tender is a carriage attached to the locomotive for carrying the fuel, water, etc.

Tendon, the white fibrous tissue reaching from the end of a muscle to bone or some other structure which is to serve as a fixed attachment for it, or which it is intended to move. Tendons have been divided into (1) Funicular, or rope-like, as the long tendon of the biceps muscle of the arm. (2) Fasicular, as the short tendon of that muscle and as the great majority of tendons generally. (3)

Aponeurotic or tendinous expansions, sometimes of considerable extent, and serviceable in strengthening the walls of cavities, as the tendons of the abdominal muscles. The tendons commence by separate fascicles from the end of each muscular fiber, and they similarly terminate by separate fascicles in distinct depressions in the bones, besides being closely incorporated with the periosteum. The tendons most frequently ruptured are the Achilles Tendon, and the tendons of the rectus femoris and the triceps humeri.

Tendotome, in surgery, a subcutaneous knife, having a small oblanceolate blade on the end of a long stem, and used for severing deep-seated tendons without making a large incision or dissecting down to the spot.

Tendrac, in zoölogy, a small insectivorous mammal, from Madagascar, it is about two-thirds the size of the common hedgehog.

Tendril, in botany, a curling and twining thread-like process by which one plant clings to another body for the purpose of support. It may be a modification of the midrib, as in the pea; a prolongation of a leaf, as in Nepenthes; or a modification of the inflorescence, as in the vine. They have been divided into stem tendrils and leaf tendrils. Called also cirrhus, and by the old authors capreolus and clavicula.

Tenebræ, the office of Matins and Lauds in the Roman Catholic Church for the Thursday, Friday, and Saturday in Holy Week, sung on the afternoon or evening of Wednesday, Thursday, and Friday respectively with extinguished lights. The extinction of the lights is said to figure the growing darkness of the world at the time of the Crucifixion, and the last candle is hidden for a time to signify that death could not really obtain dominion over Christ, though it appeared to do so. A noise is made at the conclusion of the office to symbolize the convulsions of nature at the death of Christ.

Tenebrionidæ, in entomology, a family of heteromerous beetles, tribe Trachelia. Black or dull-colored insects, with a peculiar odor, slow in their movements and nocturnal in their habits. A few aberrant species are found on trees and plants. They feed generally on decaying animal and vegetable matter. About 5,000 species are known.

Tenement House, a house divided into tenements occupied by separate families. In tenement houses the landlord does not usually reside on the premises. In most large cities of the United States, owing to the exorbitantly high price of land whereon to build, the policy has obtained of building houses containing apartments to accommodate as many persons as can be crowded into them. These apartments are let by the landlord either in suites or by the single room.

In a legal sense the term "tenement" applies, in the United States, to the higher class apartment houses, as well as to the abodes of the poorest. Of late years there has been great improvement in New York and other cities in the construction of tenements. New York in particular has stringent laws for the well being of tenement residents, and unsanitary conditions are being fast eliminated. Rooms without apertures for air are no longer permitted, and there must be a certain amount of open space for every new building. The better class of tenements are usually called "apartments," and while the cheaper apartments have heat, hot water, gas and other comforts, the higher-priced are almost palatial in their luxurious fittings. In the eyes of the law, however, they are all tenements.

Tengmalm's Owl, the common passerine is deep brown, with a white throat, round brown spots on the breast and wings, and four white lines on the tail. It is scarcely larger than a blackbird.

Tennessee, a State in the South Atlantic Division of the North American Union; admitted to the Union June 1, 1796; capital, Nashville; number of counties, 96; area, 42,050 square miles; pop. (1900) 2,020,616.

Topographically Tennessee is divided into three sections, East Tennessee, an extensive valley, and agriculturally one of the most important sections of the State, stretches from the E. boundary to the middle of the Cumberland tableland, which has an average elevation of 2,000 feet above the sea,

and abounds in coal, iron, and other minerals. Middle Tennessee extends from the dividing line on the tableland to the lower Tennessee river; and West Tennessee from the Tennessee river to the Mississippi. The Unaka Mountains, a part of the Appalachian chain, run along the E. boundary, and have an average elevation of 5,000 feet above the sea. The Mississippi, with the Tennessee and the Cumberland, drains three-fourths of the State. The two latter are navigable for a considerable distance, and other rivers with numerous tributaries supply valuable water power.

The State is rich in its mineral resources, asbestos, kaolin, granite, copper, iron, manganese, barytes, clay, building stones, lead, and zinc being among the leading products. Coal measures occupy over 5,000 square miles in the Cumberland Mountain region. Limestone caves are found in many places, few having been explored. In 1900 the principal mineral productions were coal, coke, phosphate rock, metallic paint, mineral waters, clay products, slate, marble, limestone, red hematite, and brown hematite.

The soil is exceedingly fertile, nearly every agricultural product thriving well, according to locality. The principal grain crops are Indian corn, wheat, and oats; and cotton, tobacco, flax, and hemp are extensively cultivated. The rearing and fattening of live stock are carried on under peculiar advantages, and immense numbers of hogs grow up on the mast of the forests, which cover a very large area.

According to the United States census of 1900, the State had 8,007 manufacturing establishments, employing $71,182,966 capital and 53,820 persons; paying $19,777,449 for wages and $63,384,665 for materials; and having products aggregating in value $107,437,879.

On Oct. 31, 1901, there were reported 56 National banks in operation, having $7,300,000 in capital, $3,717,930 in outstanding circulation, and $3,637,500 in United States bonds. There were also 132 State banks, with $5,656,337 capital, and $1,009,350 surplus; and 7 stock savings banks, with $392,500 capital, and $3,519,333 in savings deposits.

The imports of merchandise at the ports of Memphis, Nashville, Knoxville, and Chattanooga, during the year 1900 aggregated in value $126,609. The collections for internal revenue in the State during the fiscal year ending June 30, 1900, amounted to $2,295,606.

At the end of the school year 1899–1900, the children of school census age numbered 691,570; the enrollment in public schools, 485,354; and the average daily attendance 338,566. There were 7,185 public school buildings, public school property valued at $3,063,568; and 9,195 teachers. The receipts for the year amounted to $1,809,246; and the expenditures, $1,751,047. For higher education there were 101 public high schools, 101 private secondary schools, 1 public, and 13 private normal schools, 27 universities and colleges for men and for both sexes, and 12 women's colleges. The principal colleges are the University of Nashville, and Vanderbilt University, at Nashville; University of the South at Sewanee; U. S. Grant University, at Athens, and the University of Tennessee, at Knoxville. The women's colleges include the Tennessee Female College, at Franklin; Ward Seminary, at Nashville; and Rogersville Synodical College at Rogersville.

The strongest denominations in the State are the Methodist Episcopal South; African Methodist; Regular Baptist, colored; Cumberland Presbyterian; Methodist Episcopal; Disciples of Christ; Roman Catholic; Presbyterian, South; Primitive Baptist; Protestant Episcopal; and Presbyterian, North.

On June 1, 1901, the total interest bearing debt of Tennessee was $15,946,000; and the estimated amount of bond not yet funded, $678,666.

The governor is elected for a term of two years and receives a salary of $4,000 per annum. Legislative sessions are held biennially and are limited in length to 75 days each. The Legislature has 33 members in the Senate and 99 in the House, each of whom receives $4.00 per day and mileage. There are 10 Representatives in Congress.

In 1756 a settlement was formed near Knoxville, then a part of North Carolina; Nashville was settled ne

the close of the Revolution; in 1790 Tennessee was organized as a territory with Kentucky; and admitted in 1796 to the Union as a separate State. In January, 1861, a proposition to secede from the Union was defeated; but in June, carried by a majority of 57,567. In 10 months the State raised 50 regiments for the Southern Confederacy; while 5 or 6 were also recruited for the Union. The State was the scene, at Knoxville and Chattanooga, of some of the most important operations of the war. For years after the general pacification of the country, local disorders continued in Tennessee to disturb the tranquillity of the community, and it was only in 1870 that, after the adoption of the 15th amendment to the Constitution of the United States, and of a new State constitution, Tennessee was readmitted to representation in Congress.

Tennessee, Society of the Army of the, the second society composed of soldiers organized during the Civil War. The preliminary meeting for the formation of the society was held in the Senate Chamber at the State Capitol, Raleigh, N. C., April 14, 1865. Membership in the society was restricted to officers who had served with the Old Army of the Tennessee.

Tennessee, University of, a coeducational non-sectarian institution in Knoxville, Tenn.; founded in 1794.

Tenney, Edward Payson, an American author; born in Concord, N. H., Sept. 29, 1835; studied at Dartmouth College in 1854–1855, and was graduated at Bangor Seminary in 1858. He was for many years the pastor of the Congregational Church in Easton, Mass.; for a short time editor of the "Pacific" in San Francisco, and the "Congregational Review" in Boston; and president of Colorado College in 1876–1884.

Tenney, Mrs. Sarah (Brownson), an American novelist; born in Chelsea, Mass., June 7, 1839. She was a daughter of Orestes A. Brownson.

Tennis, a game played with small hard balls in a specially constructed court by two opponents who keep the ball continually in motion by striking it with a racket. Tennis is supposed, from the terms still used in the game, to have originated in France prior to the 15th century. It became very fashionable in England during Charles II.'s reign.

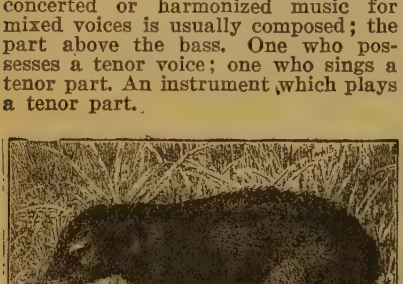
Tennis, Lawn, an out-door game played with balls, which are of hollow rubber, covered with smooth white cloth, cemented to the ball, on a piece of smooth, level sward. It remotely resembles tennis. The modern game of lawn tennis was originated by Major Wingfield in Wales in 1874, and introduced into the United States the same year by F. R. Sears and James Dwight.

Tennyson, Alfred, Lord, an English poet; born in Somersby, England, Aug. 6, 1809. He attended Trinity College, Cambridge, where in 1829 he won the chancellor's medal by a poem in blank verse entitled "Timbuctoo." His literary career may be said to date from 1830, when he published a volume entitled "Poems, chiefly Lyrical." It was not received with any great favor by the public. Its success was sufficient to encourage the poet to prepare a second collection, which appeared in 1833, and contained such poems as "A Dream of Fair Women," "Œnone," and others. It was not till 1842 that he again appealed to the public with a selection of his poems in two volumes. His reputation was more than sustained by the works that immediately followed. He received the laureateship (1850) upon the death of Wordsworth. Thereafter hardly a year passed without his adding some gem to our language. In 1855 the University of Oxford conferred on Tennyson the honorary degree of D. C. L. Among his later compositions are the dramas, "Queen Mary" (1875); "Harold" (1876), and "The Cup." The latter was successfully produced by Mr. Irving at the Lyceum Theater in 1881, as had also been "Queen Mary." "The Falcon," another drama, was produced by Mr. and Mrs. Kendal in 1882, and "The Promise of May" was brought out at the Globe Theater the same year. Tennyson was raised to the peerage in 1884 as Baron Tennyson of Aldworth, Sussex, and Freshwater, Isle of Wight. He died in Aldworth, England, Oct. 6, 1892, and was buried in Westminster Abbey.

Tenon, or **Tennon,** in carpentry, the projecting end of a piece of timber fitted for insertion into a mortise, formed by cutting away a portion on one or more sides; sometimes made cylindrical.

Tenor, in law, a transcript or copy. It implies that a correct copy is set out, and therefore the instrument must be set out correctly, even though the pleader may not have set out more than the substance or purport of the instrument.

In music: The third of the four kinds of voices arranged with regard to their compass. It is the highest of the male chest voices, and its extent lies between tenor C and treble A. The third of the four parts in which concerted or harmonized music for mixed voices is usually composed; the part above the bass. One who possesses a tenor voice; one who sings a tenor part. An instrument which plays a tenor part.



THE TENREC.

Tenrec, in biology, a genus of Insectivora, represented by one species, which is restricted to Madagascar, Bourbon, and Mauritius. It is the largest known insectivore, measuring from 12 to 16 inches in length; and it is probably the most prolific of mammals, since as many as 21 young are said to have been brought forth at a birth. It feeds chiefly on earthworms, and is said to become dormant during the hottest part of the year.

Tent, a portable pavilion or lodge, consisting of some flexible material, such as skins, matting, canvas, or other strong textile fabric, stretched over and supported on poles. Among uncivilized and wandering tribes tents have been ordinary dwelling places from the earliest times, but among civilized nations they are principally used as temporary lodgings for soldiers when engaged in the field, for travelers on an expedition, or for providing accommodation, refreshment, etc., for large bodies of people collected together out of doors on some special occasion.

The tent is the one human habitation which seems never to have changed in form. Nineveh sculptures show the tent of King Sennacherib, which was supported by ropes just like a modern tent. The Roman soldiers had the tent proper, but they also had huts of branches, hides, straw, etc., not unlike the temporary dwellings of our soldiers when they stopped for more than a few hours at one place in the late Civil War. The Indian tent of buffalo hide was familiar to every frontiersman and soldier on the plains, but it has disappeared with the buffalo, and with the altered conditions of frontier life.

Tentacle, in zoölogy, an elongated appendage proceeding from the head or cephalic extremity of many of the lower animals, and used as an instrument of exploration and prehension.

Tenure, the act, manner, or right of holding property, especially real estate. Land may be held according to two main principles, feudal or allodial. The former is the principle universal in England. In the United States the title to land is essentially allodial, and every tenant in fee-simple has an absolute and perfect title.

Tenure of land in American cities and vicinity is often subject, however, to restrictions, such as perpetual prohibition of the use of land for certain purposes judged by the former owner to be injurious, such as the sale of liquor, etc.

Tenure-of-office Act, in the United States, a bill passed by Congress in February, 1867, limiting the powers of the President in removals from office. Among other things, it took from the President the power to remove members of his cabinet excepting by permission of the Senate, declaring that they should hold office "for and during the term of the President by whom they may have been ap-

inted, and for one month thereafter, bject to removal by and with the nsent of the Senate." President hnson vetoed this bill when it was ssed over his veto and became a w.

Tenures of Land. Nearly all the al property of England is supposed have been granted by a superior rd, and to be held from him in con- deration of certain services to be ndered to him by the tenant.

Teocalli (House of God), the me given by the ancient Mexicans their places of worship. They were ilt in the form of four-sided pyra- ids, consisting of two, three or more ories, or terraces, with the temple oper on a platform on the summit. nese temples were the scenes of the rrible human sacrifices which were e principal feature of Aztec wor- ip, and accompanied by cannibalism, e remains of the victims being di- ded among the worshippers, and ken home to be cooked as food. ars were carried on for the sole ob- ct of obtaining victims for the san- inary rites of the "teocalli," and ousands were being sacrified yearly nen the arrival of the Spaniards put end to the practice. Some of these mples still exist, the most celebrated ing the pyramid of Cholula, measur- g 1,440 feet each way, and 177 feet height.

Tephrine, or **Tephrite,** a name iginally given to a gray, ashlike rock loose texture, the base of which was achytic. Subsequent investigation s shown, however, that it consists a plagioclase felspar, associated th either nepheline or leucite, and metimes with both, and also several cessory minerals.

Teraphim, a Hebrew plural word, curring in the Old Testament, and pposed to designate certain house- ld images. How far these images ere objects of reverence does not em to be clear. They may have en honored only for their associa- ons, and because handed down from ther to son, and probably this was e case with the better-informed and ore intelligent class, and, on the her hand, this perfectly proper and tural attachment may have given ace to idolatrous worship among those who were inclined to the prac- tices of neighboring peoples. The ven- eration shown the teraphim appears to have been regarded as an abuse by some of the more devout worshippers of Jehovah, and was dealt with at times accordingly.

Terburg, or **Terborch, Gerard,** a Dutch portrait and genre painter, born at Zwolle, near Overyssel, about 1617. His father, a historical paint- er, gave him his first lessons in paint- ing. He continued his studies at Haar- lem, and afterwards visited Germany, Italy, Spain, England, and France. On the meeting of the peace congress at Munster in 1646 he painted the as- sembled plenipotentiaries, which is now in the National Gallery, Lon- don. He subsequently visited Madrid, London, and Paris, whence he returned to Overyssel, married, and became bur- gomaster of Deventer, dying in 1681. His portraits and pictures of social life are remarkable for elegance. He excelled in painting textile fabrics.

Terce, one of the two legal life rents in the law of Scotland, being a real right constituted without cove- nant, or sasine. By it a widow, who has not accepted any special provision, is entitled to the life rent of one-third of her husband's heritable (real) es- tate, provided the marriage has lasted for a year and a day, or has produced a living child. If special provision is granted by a husband to his wife by any antenuptial or postnuptial con- tract or other deed, the wife shall be thereby excluded from her terce, un- less the contrary be provided in the same deed. The life rent bears its proportion of burdens affecting the es- tate. The mansion house, if there be only one, feu duties, rights of rever- sion, superiority, and patronage, are not subject to the right of terce.

Terceira, an island of the Atlan- tic, one of the Azores; greatest length, 20 miles; average breadth, 13 miles; area, 223 square miles. The soil pos- sesses great natural fertility, and heavy crops of grain, pulse, etc., and abundance of oranges, lemons, and other fruits are produced. The cap- ital is Angra. Pop. 46,528.

Terebratula, a genus of deep-sea brachipod bivalve mollusks found moored to rocks, shells, etc. One of

the valves is perforated to permit the passage of a fleshy peduncle, by means of which the animal attaches itself. There are few living speciés, but the fossil ones are numerous, and are found most abundantly in the secondary and tertiary formations.

Teredo, in botany, any disease in plants produced by the boring of insects. In zoölogy and palæontology, a genus of worm-like mollusks, including the teredo or shipworm, which bores into timber, and is excedingly destructive to ships. In 1731 and 1732 it created alarm in Holland by boring into the piles constituting part of the defense of the country against the inroads of the sea. Though teak is not so easily attacked as many other kinds of timber, yet it does not wholly escape. The best protection against the teredo is metal sheathing and broad headed iron nails hammered into the wood. Fossil species 24, from the Lias onward. Used also of any individual of the genus.

Terentius Afer, Publius (more commonly Terence), a Roman poet; born in Carthage, 185 B. C. Following immediately after Cæcilius, the most popular representative of Roman comedy after Plautus, he was the last of the comic dramatists of Rome of whom we have anything remaining. He was either taken prisoner in war or sold in the slave market. His purchaser, or at all events the Roman into whose hands he fell, was a senator, Lucanus Terentius. On obtaining his freedom he took his patron's name. A liberal education followed, and we soon find him the friend and associate of the great and noble. He was gifted with dramatic genius. Terence was beyond question the chief dramatist of his time. He used the Latin tongue with singular grace and elegance. Critics have denied to him the possession of lively humor. Ancients and moderns are agreed that, though a freedman and a foreigner, he divides with Cæsar and Cicero the palm of pure Latinity. Terence was the interpreter of Menander; but he was more than a mere translator. His six comedies that remain belong to the "Fabula Palliata." It is said that Terence went to Greece and translated 108 of Menander's plays. Whether he was lost on his homeward voyage, as some say, or lost his transcripts and died of grief in consequence, we have no means of deciding. He died in his 26th year, 159 B. C. He owned an estate of 20 jugera contiguous to the Appian Way, and after his death his only daughter married a Roman knight.

Teresa, or **Theresa, St.,** a saint of the modern Roman calendar; born in Avila, Old Castile, Spain, March 28, 1515. She inaugurated notable reforms in the Carmelite order with a result that the influence of that association was greatly increased and extended. She died at Alba, Oct. 4, 1582, and was canonized by Gregory XV. in 1622.

Terhune, Albert Payson, an American journalist; born in Newark, N. J., Dec. 21, 1868; was graduated at Columbia University in 1893; and after traveling through Syria, where he investigated the leper settlements and lived among the Bedouins of the desert, returned to New York and joined the editorial staff of the New York "World."

Terhune, Mary Virginia, an American author; born in Amelia co., Va., Dec. 21, 1831; received an academic education, and early began to write for the press. She contributed extensively to numerous magazines; was for several years the editor of "Babyhood" and "The Home Maker"; conducted departments in "Wide Awake" and "St. Nicholas"; and served on the editorial staff of the Chicago "Daily News."

Term, a limit. The limitation of an estate; or, rather, the whole time or duration of the holding of an estate. The time in which a court is held or open for the trial of causes. The time during which instruction is regularly given to students in universities and colleges. A word or expression; the word by which a thing is expressed; that which fixes or determines ideas; a word or expression that denotes something peculiar to an art. The subject or predicate of a proposition in logic. In algebra, a member of a compound quantity. In the plural, conditions; propositions stated or promises made, which, when assented to or accepted by another,

ettle the contract and bind both of he parties.

Termagant, the name of one of the dols whom the Saracens are repre- ented in mediæval romances as wor- hiping. He was afterward intro- uced into the old Moralities as a per- on of violent temper, so that a rant- ng actor might appear to advantage n that character. The word, in com- non usage, means a turbulent, brawl- ng, scolding or abusive person.

Terminalia, in Roman antiquities, festival celebrated annually on Feb. 3, in honor of Terminus, the god of oundaries. It was then usual for easants to assemble near the princi- al landmarks which separated their elds, and, after they had crowned hem with garlands and flowers, to ake libations of milk and wine, and sacrifice a lamb or a young pig. he public festival was celebrated at ie sixth milestone on the road to aurentum, because at one time that as the limit of Roman territory.

In botany (as a pseudo-singular), ie typical genus of Terminaleæ. rees and shrubs from the tropics of merica and Asia. T. chebula is a rge and valuable tree, 80 to 100 feet gh, growing in India and Burma. he fruit is ellipsoid or obovoid and ve-ribbed, from three-quarters of an ch to an inch and a quarter in ngth. The pounded rind gives the ack myrobalan. The bark of the ee is used for tanning and dyeing. here are often galls on it, which are so used for dyeing. Another of the yrobalans is T. belerica, 60 or 80 et high. It grows in India. The aves and the fruit are used for tan- ng and dyeing.

Terminism, in Church history, the lief that there is a terminus in each an's life, after which he is no longer pable of receiving grace or pardon r his sins.

Terminus, in mythology, a divinity ong the Romans supposed to pre- le over boundaries, frontiers, and ndmarks. He was represented with human head and neck, placed on a nth, or column, and being destitute legs or arms.

Tern, in ornithology, the popular me of any species of the genus erna. They are slenderly built birds, with long, narrow, sharp-pointed wings, and forked tail, from which, as well as from their swift and circling manner of flight, they are often called sea swallows. They are extensively distributed, inhabiting every zone, but prefer warm and temperate climates to the colder regions, which they only visit for a short period during the year. All are exceedingly active, and from sunrise to sunset are on the wing, generally flying very near the surface of the water, rising and sinking as the waves heave and fall. They walk badly and are not good swimmers, their small feet rendering them but little assistance, so that they are tossed about like corks. They feed on small fish and marine animals, always taking their prey on the wing.

Terpodion, in music, a keyed instrument invented by John David Buschmann, of Hamburg, about 1816, resembling a pianoforte in appearance but producing notes from blocks of wood struck with hammers. The sound could be increased or diminished at pleasure.

Terpsichore, in classical antiquities, one of the muses, daughter of Jupiter and Mnemosyne. She presided over dancing, of which she was reckoned the inventress, and in which, as her name intimates, she took delight. She is represented as a young virgin crowned with laurel, and holding in her hands a musical instrument.

Terrace, a raised level space or platform of earth, supported on one or more sides by masonry, a bank or platform of turf or the like. In physical geography and geology, a platform, often of soft material, flat above, and more or less steep on the sides.

Terra-Cotta, an Italian term for pottery or earthenware. The name is not ordinarily applied to pottery vessels with thin walls, but is confined to statues, statuettes, bas-reliefs, and architectural members such as columns, and the like made of burnt clay. But the term is not necessarily confined to articles of a decorative character. The color of terra-cotta is either buff, yellow, or red, the former being the more common. Many masterpieces of ancient Greek and Roman sculpture are executed in this mate-

rial, and a considerable number of works in burnt clay, by Italian artists who lived in the Middle Ages and early Renaissance periods, are also exquisite productions. Architectural ornaments of a very effective kind were also executed in this material in ancient times. Distinguished modern sculptors sometimes produce works in terra-cotta, and for the last 30 or 40 years it has been increasingly employed, either partly or wholly, for the fronts and other portions of important buildings.

Terrapin, the popular name of several species of fresh-water or tide-water tortoises, natives of tropical and warmer temperate countries, many being natives of North America. They feed on vegetables, fish, reptiles, and other aquatic animals. Their flesh is much esteemed. One species, called the salt-water terrapin, is abundant in the salt-water marshes around Charlestown. The chicken tortoise, so named from its flavor, is also an esteemed American species.

Terraverde, a name given to two kinds of native green earth used as pigments in painting; one obtained from Monte Baldo, near Verona, the other from the island of Cyprus. The former has much more body than the latter, and is very useful in landscape painting in oil colors. It is a siliceous earth colored by the protoxide of iron, of which it contains about 20 per cent. It is not affected by exposure to strong light or impure air.

Terrell, Edwin Holland, an American diplomatist; born in Brookville, Ind., Nov. 21, 1848; was graduated at De Pauw University in 1871; studied in Europe in 1873–1874; and practised law in Indianapolis in 1874–1877. He was a delegate to the Republican National Conventions, from Texas in 1880 and 1888; United States minister to Belgium in 1889-1893; conducted the negotiations for the United States with the six powers holding possessions in the Kongo basin and secured from them the "Protocol" of Dec. 22, 1890, granting the United States and its citizens full commercial privileges, etc. He was minister plenipotentiary to negotiate a commercial treaty with the Kongo Free State in 1891; commissioner to and vice-president of the International Monetary Conference at Brussels in 1892.

Terrier, a name originally applied to any breed of dog used to burrow underground, but now applied to any small dog. Terriers may be divided into three classes; those able to follow their game into its earth, those kept for hunting above-ground, and those kept merely as companions. Among terriers proper the fox terrier holds the position of greatest popularity. The Scotch terrier, though long familiar in Scotland, only became generally known about 1870, but is spreading so rapidly that it threatens even the popularity of the fox terrier. The third variety used for going to ground is the Dandie Dinmont. The Dandie is a low and powerful dog, very courageous, a quality probably gained by an admixture of bulldog blood, but headstrong and difficult to keep under control.

Among terriers kept for hunting above ground the most popular is the Irish terrier. The coat is like the Scotch terrier's, but a light red in color. The ears used always to be cut to a fine point, standing erect, but are now allowed to fall over in their natural shape. Among terriers kept as companions the Skye is probably the most common. The black-and-tan terrier, though a breed of great antiquity, is fast being supplanted by the white English terrier. Both breeds are identical in shape and resemble a light and elegant bull terrier. The toy terrier is a cross from the black-and-tan, as is the Yorkshire terrier. Both varieties are fit only for house dogs and are not true terriers.

Territory, a term applied in the United States to an area similar to a State of the Union, but not having the independent position of one. The unorganized Territories are under the direct control of Congress. Each organized Territory has a governor, appointed by the President, for four years and ratified by the Senate. The Legislature, officially known as the Legislative Assembly, is composed of a council and a house of representatives, chosen every two years by the people. A delegate to Congress is elected for the same term. He has the right of debate, but not a vote in the House. Territorial courts are

provided for, the judges of which are appointed by the President for four years, and confirmed by the Senate, and over which the Supreme Court of the United States has appellate jurisdiction.

Terror, Reign of, the term usually applied to the period of the French revolutionary government from the appointment of the revolutionary tribunal and the committee of public safety (April 6, 1793) to the fall of Robespierre (July 27, 1794).

Terror, The, one of the vessels which accompanied the ill-fated Arctic exploring expedition under Sir John Franklin in 1845. From documents found on King William's Land by Captain McClintock, it is known that Franklin died in 1847, and that the ships "Erebus" and "Terror" were deserted by the remainder of the explorers who started for the Great Fish river. They all perished and no traces of the vessels were ever found.

Terror, The, a twin-screw, iron, double-turreted monitor of the United States navy.

Terry, Alfred Howe, an American military officer; born in Hartford, Conn., Nov. 10, 1827; studied law at Yale College and began its practice in 1848. From 1854 to 1860 he was clerk of the Superior and Supreme Courts of Connecticut. At the outbreak of the Civil War he was colonel of a regiment of militia, was made a Major-General of volunteers, and Brigadier-General in the regular army. In March, 1865, he was placed in command of the 10th Corps, and in June, of the Department of Virginia. From 1869 to 1872 he was at the head of the Department of the South, and after 1872 had charge of various divisions and departments of the army. In March, 1886, he was promoted to the major-generalship, made vacant by the death of General Hancock, and in the following April took command of the Department of the Missouri. He retired in 1888, and died in New Haven, Conn., Dec. 16, 1890.

Terry, Ellen Alice, an English actress; born in Coventry, England, Feb. 27, 1848, and made her first appearance on the stage during Charles Kean's Shakespearian revivals in 1858. In 1864 she married and left the stage, but reappeared again in October, 1867. She accompanied Mr. Irving on his numerous American tours, playing with unprecedented success all over the United States.

Terry, Henry Taylor, an American lawyer; born in Hartford, Conn., Sept. 19, 1847; was graduated at Yale College in 1869, and admitted to the Connecticut bar in 1872. In 1878 he became Professor of Law at the Imperial University of Tokyo, Japan, but returned to the United States in 1884, and began the practice of his profession in New York city. In 1894 he resumed his chair in the Imperial University.

Terry, Milton Spenser, an American educator; born in Coeymans, N. Y., Feb. 22, 1840; was graduated at Troy University and the Yale Divinity School; held pastorates in various Methodist Episcopal churches in New York city in 1863-1884; and in 1885 was made Professor of Christian Doctrines in the Garret Biblical Institute, Northwestern University.

Terry, Silas Wright, an American naval officer; born in Kentucky, Dec. 28, 1842; was appointed to the navy in 1858. At the outbreak of the Civil War he was assigned to the "Dale" in the Atlantic Coast Blockading Squadron, in which he served till 1863, when he was transferred to the "Black Hawk," of the Mississippi Squadron. Soon afterward he was placed in command of the transport "Benefit" to carry dispatches and supplies to Admiral Porter; to whose staff he was appointed and under whom he served till the close of the war. Afterward he cruised on the "Ticonderoga" in European waters; was executive officer on the flagships "Severn" and "Worcester"; inspector of the Maryland Lighthouse District; and commanded the "Marion," attached to the South Atlantic Squadron. In 1887 he went to Washington, D. C., where he was engaged on board duty till 1892. He was promoted captain in 1893, and during the Spanish-American War commanded the receiving ship "Franklin" at Norfolk. He was made commander of the navy yard at Washington, D. C., March 24, 1900; and on March 29, following, was promoted rear-admiral.

Tertiaries, a name given by Church writers to a class in the Roman Catholic Church, who, without entering into the seclusion of a monastery, aspire to practise in ordinary life all the substantial obligations of the scheme of virtue laid down in the Gospel.

Tertiary, a color, as citrine, russet, or olive, produced by the mixture of the two secondary colors. In geology, the third leading division of fossiliferous sedimentary rocks; called also the Cainozoic or Kainozoic. The succession and importance of the Primary (Palæozoic) and the Secondary (Mesozoic) rocks were understood before the nature and extent of the Tertiary were recognized, these last strata being confounded with the superficial alluviums. They were observed to occur in patches (some of fresh-water and others of marine origin) in small areas or basins in the Secondary rocks, suggesting the idea that they had been deposited in bays, lakes, estuaries, or inland seas, after a great part of what is now Europe had been converted into dry land.

Tertullianus, Quintus Septimius Florens (more commonly, Tertullian), a theologian of the Western Church; born of heathen parents in Carthage about 160. He did not become a Christian till about 190, and he has not recorded the history of his conversions. That he was married is shown by his two books "To the Wife," in which he argues against second marriages. Some time between 199 and 203 his opposition to the spirit of worldliness in the Church culminated in his becoming a leader of the Montanist sect. He died between 220 and 240, "in decrepit old age."

Tesla, Nikola, an American electrical inventor; born in Smiljan, Austria-Hungary in 1857; studied engineering in Paris; and in 1884 came to the United States, and for several years was employed at Edison's laboratory, near Orange, N. J. He then opened a laboratory of his own. In 1888 he completed his discovery of the rotating magnetic fluid by the invention of the rotary field-motor, the multi-phase system of which is used in the 50,000 horse-power plant built to transmit the water power of Niagara Falls to Buffalo and other cities. He invented many methods and appliances for the use of electricity, among them the production of efficient light from lamps without filaments, and the production and transmission of power and intelligence without wires. In November, 1898, Tesla announced the discovery of, and on May 1, 1900, patented, a method of transmitting electrical energy without wires. Working along the same line William Marconi invented his wireless-telegraphy. In 1901 Tesla discovered that the capacity of the electrical conductor is variable.

Test Act, in English history, an act passed in 1563 by which an oath of allegiance to Queen Elizabeth, and of abjuration of the temporal authority of the Pope, was exacted of all holders of office, lay or spiritual, within the realm, except peers.

Testing, the process of examining various substances by means of chemical reagents, with the view of discovering their composition.

Testing Clause, in Scotch law, the clause in a formal written deed or instrument by which it is authenticated according to the form of law. It consists essentially of the name and designation of the writer, the number of pages of which the deed consists, the names and designations of the witnesses, the name and designation of the person who penned the deed, and the date and place of signing.

Testing Machines, machines used for the accurate testing of iron, steel and other materials used in constructive work. The problem which these machines are intended to solve is the adjustment with certainty of a safe margin of strength with a minimum of weight, which can be determined only by experimental tests on full sized sections of the materials used in the construction. One method is to use machines designed to test small sample pieces under such conditions that the breaking strength of the test-piece is measured by the machine, and from the figures thus obtained is calculated the strength per square inch of the full-sized constructive material.

Test Oath, an oath prescribed by the United States Congress July 2,

1862, to be taken by persons in the former Confederate States appointed to office under the National government.

Test Papers, in chemistry, are made by dipping unsized paper into an alcoholic solution of a vegetable coloring matter which changes color when exposed to the action of an acid or alkaline solution.

Testudinidæ, the land tortoises; very widely distributed in both hemispheres, but absent from Australia. They are vegetable feeders, and the greater part of the species belong to the type genus Testudo. In some classifications the family includes the fresh-water tortoises; now generally made a separate family.

Testudo, in Roman antiquity, a cover or screen used in assaults on fortified towns. In cases where the cown was of small size and accessible on every side, while the force at the disposal of the besiegers was large, a ding of soldiers was drawn round the walls, a portion of whom kept up a constant discharge of missiles on those who manned the battlements, while the rest, advancing on every side simultaneously, with their shields joined above their heads so as to form a continuous covering like the shell of a tortoise, planted scaling ladders against a number of different points, and, at the same time, endeavored to burst open the gates.

Tetanus, stiffness or spasm of the neck; a disease common to mankind and animals. It is characterized by the contraction of a greater or less number of muscles by paroxysmal spasms, which aggravate the contractions and by troubles more or less accentuated in the calorification of the circulation and respiration. It is most commonly located in the jaw and begins with painful stiffness at the maxillary muscles and the muscles at the nape of the neck or by difficulty in swallowing. The progress of tetanus is either acute or chronic. The acute form develops in from one to four days; the chronic form may last a fortnight. In acute tetanus the average number of deaths ranges from 65 to 80 per cent.

Tethys, in Greek mythology, the greatest of the sea deities, wife of Oceanus, daughter of Uranus and Terra, and mother of the chief rivers of the universe, Nile, Peneus, Simois, Scamander, etc., and about 3,000 daughters called Oceanides. The name Tethys is said to signify nurse. In astronomy, a Satellite of Saturn. In zoölogy a genus of Tritoniadæ, with one species, from the Mediterranean. It attains a foot in length, and feeds on other mollusks and on small crustacea.

Tetrachordon, in music, an instrument similar in appearance to a cottage pianoforte, and like it played by finger-board, but the tone, instead of being produced by striking, is obtained by means of a cylinder of india-rubber charged with resin, kept in motion by a pedal, variety of tone being gained by the depth of pressure on the keys by the fingers. It is called the tetrachordon from an idea that its sounds are similar to those produced by a string quartet.

Tetragonurus, a rare fish, more frequently met with in the Mediterranean than in the Atlantic. Nothing is known of its habits, but as, when young, it accompanies the Medusæ, it must be regarded as a pelagic form. At a later period of its existence, it probably descends to greater depths, coming to the surface only at night. It attains a length of about 18 inches.

Tetrarch ("governor of the fourth part"), a title originally designating what is signified by its etymology, the governor of one of four divisions of a kingdom or country; but in the usage of the later Roman empire given undistinguishingly to all minor rulers, especially in the East, possessing sovereign right within their territory, but dependent on the emperor, and in many cases removable at his pleasure. This was especially the case in Syria, where the princes of the family of Herod are called indiscriminately by this title and by that of king.

Teutones, or **Teutons,** in antiquity, a powerful German tribe, which, in alliance with the Cimbri, advanced into Illyria, and defeated the consul Cn. Papirius Carbo, at Noreia 113 B. C. They afterward forced their way into Roman Gaul, and defeated Manlius and Scipio 105 B. C.; and they invaded Spain 104 B. C. On their re-

treat from Spain, they were met by the Romans, under Marius, at Aquæ Sextiæ, the modern Aix, and totally defeated, 102 B. C.

Teutonic Knights, one of the three military-religious orders of knighthood founded during the period of the Crusades. There had been a German hospital in Jerusalem from 1128 to 1187, and the new arrangement at Acre was in some sort a continuance of this, being called the Hospital St. Mary of the Germans in Jerusalem. The new hospital, the attendants and founders of which formed themselves into a monastic order with the same rules as the Knights Hospitallers of St. John, found a patron in Duke Frederick of Swabia, and through him secured the countenance of his brother, the Emperor Henry VI., and the confirmation of the Pope (1191). Seven years later it was converted into a knightly or military order; and the change was stamped with the papal approval in 1199. The knights, in addition to the usual monastic vows, bound themselves to tend the sick and wounded, and wage incessant war on the heathen. Their distinguishing habiliment was a white mantle with a black cross. The chief officer of the order was the grand-master or "high-master," who was assisted by five other dignitaries. The chapter consisted of these six officers in conjunction with the provincial masters. The minor districts and individual castles were governed by commanders, who constituted also the respective provincial councils. There was, moreover, a class of "serving brothers," who performed menial offices about the hospitals; and to these were added in certain places a class of inferior female domestics called "half-sisters."

About the year 1225 the Duke of Masovia (in Poland) invited the Teutonic Knights to help him against the heathen Prussians. The grand-master, Hermann von Salza, sent a body of knights, who experienced little difficulty in establishing themselves in the territories of the heathen. Twelve years later they were strengthened by the absorption into their order of the Brethren of the Sword, a military order which had been formed to convert to Christianity with the sword the Livonians, Esthonians, and Courlanders. The successive encroachments of the knights roused the Prussians to bitter opposition. A fierce warfare was carried on for nearly a quarter of a century; but by 1283 the knights were masters of the territory lying between the Vistula and the Memel, and as heirs of the extinct Brethren of the Sword they had also extensive possessions in Livonia and Courland. In 1309 the executive officers of the order established themselves in the great castle of Marienburg, near the Vistula. After subduing the Prussians, the order entered on a hundred years' contest against the Lithuanians. But a most serious blow was struck at the knights by the conversion of the Lithuanians to Christianity and the accession (1386) of their prince to the throne of Poland.

From this time the order began to decline. In 1525 the order was secularized; its grand-master, Albert of Brandenburg-Anspach, being created hereditary Duke of Prussia under the suzerainty of Poland. The headquarters of the order was fixed at Mergentheim in Swabia, and its possessions were reorganized in 12 bailiwicks. Thus it existed till 1801, when the estates W. of the Rhine were annexed by France; in 1809 the order was entirely suppressed by Napoleon in all the German States. This left only a couple of bailiwicks in Austria and one at Utrecht; and these still exist, severely aristocratic in both countries. The Austrian branch, reorganized in 1840, justifies its existence by maintaining an organization for the care of the wounded in war.

Teutonic Peoples, a term now applied: (1) to the High Germans, including the German inhabitants of Upper and Middle Germany and those of Switzerland and Austria. (2) The Low Germans, including the Frisians, the Plattdeutsch, the Dutch, the Flemings, and the English descended from the Saxons, Angles, etc., who settled in Britain. (3) The Scandinavians, including the Norwegians, Swedes, Danes and Icelanders.

Tewfik Pasha, Khedive of Egypt; born Nov. 15, 1852; eldest son of Ismail Pasha; succeeded on his father's abdication in 1879, in virtue of the arrangement of 1866 between Ismail

and the Sultan. The chief events of his reign were the insurrection of Arabi, the war with the Mahdi, the pacification of the Sudan frontiers, and the steady improvement of the condition of Egypt under English administration. He died Jan. 7, 1892.

Tewkesbury, an old market town of Gloucestershire, England. On the site of the cell of the hermit Theoc, from whom the place received its name, was founded in 715 a monastery, refounded in 1102 as a great Benedictine abbey. Its noble church, consecrated in November, 1123, measures 317 feet by 124 feet across the transepts, and remains essentially Norman, in spite of later additions — Early English, Decorated, and Perpendicular. It was restored in 1875–1879. Within half a mile was fought (May 4, 1471) the famous battle of Tewkesbury, in which the Yorkists under Edward IV. gained a crowning victory over the Lancastrians.

Texas, a State in the South Central Division of the North American Union; admitted to the Union Dec. 29, 1845; capital, Austin; number of counties 246; area, 265,780 square miles; pop. (1900) 3,048,710.

The surface in the N. W. is covered with mountains, which, in proceeding S. E., subside into hills and undulating plateaus, succeeded on approaching the Gulf of Mexico, by low alluvial plains. These extend inland from 20 to 80 miles, are furrowed with deep ravines, and consist for the most part of rich prairie or forest land. The hilly region behind this is formed chiefly of sandstone and limestone ridges, separated by valleys of considerable fertility. In the mountainous region many of the summits are lofty, and covered with snow several months of the year. The general slope of the country gives all the rivers a more or less southerly direction. The Rio Grande, rising in Colorado, forms the W. and S. W. boundary of the State, from the 32d parallel to the sea. The Red river, which has its source in the Staked Plain, forms the greater part of the N. boundary. The other important rivers are the Colorado, the Brazos, the San Jacinto and Trinity, and the Sabine, which, during the greater part of its course, is the boundary between Texas and Louisiana. A long chain of lagoons stretches along the Gulf of Mexico.

Coal is the most valuable mineral product, but extensive beds of iron, lead, silver, bismuth, and gold are also found. Salt, building stones, clay, arsenic, antimony, mineral oils, and fertilizers are among smaller productions. There are numerous mineral springs and oil wells. In the latter part of 1900 extensive oil fields were discovered near Beaumont, and produced a great boom in the Texas oil industry.

The soil of Texas is, as a whole, extremely fertile. The two staple products are cotton and maize, both of which are largely cultivated in the lower or coast region, where the sugar cane and tobacco also grow luxuriantly. Wheat, rye, oats, and barley thrive best in the black land prairie regions; and both there and at lower levels fruits in almost endless variety are abundant. The forests contain large tracts of oak. The pastures are often covered with the richest natural grasses, and the rearing of cattle is carried on to the greatest advantage. The principal farm crops in 1900 were corn, wheat, oats, barley, rye, potatoes, and hay. The cotton crop of 1899–1900 was 2,438,555 bales, making Texas the first cotton growing State.

According to the United States census of 1900, the State had 12,289 manufacturing establishments, employing $90,433,882 capital and 51,712 persons; paying $23,781,430 for wages and $67,102,769 for materials; and having an aggregate output valued at $119,414,982. The principal industries according to the value of the output were the manufacture of lumber and timber, cotton seed oil and cake flour and grist, railroad cars, ginned cotton, packed meat, saddlery and harness, and foundry and machine-shop products.

On Oct. 31, 1901, there were reported 288 National banks in operation, having $22,570,510 in capital, $9,695,463 in outstanding circulation, and $9,192,480 in United States bonds. There were also 33 private banks, with $1,108,744 in capital, and $274,746 surplus.

The imports of merchandise at the ports of Brazos de Santiago, Corpus Christi, Galveston, Paso del Norte, and Saluria, for the year 1900, aggre-

gated in value $5,113,450; and the exports, $114,166,714. The imports of gold and silver amounted to $15,633,299; and the exports, $28,592.

According to official reports in 1900 the children of school census age numbered 1,070,000; the enrollment in public schools, 578,418; and the average daily attendance 393,780. There were 11,133 public school buildings, public school property valued at $9,166,550; and 15,000 teachers. For higher education there were 201 public high schools, 64 private secondary schools, 3 public, and 6 private normal schools, 16 universities and colleges for men and for both sexes, and 5 women's colleges. The principal colleges are the University of Texas, at Austin; Fort Worth University, and Polytechnic College, at Fort Worth; Southwestern University, at Georgetown; and Baylor University, at Waco. The women's colleges include the Baylor Female College, at Belton; Carlton College at Bonham; and the Mary Nash College, at Sherman.

The strongest denominations in the State are the Methodist Episcopal, South; Regular Baptist, South; Regular Baptist, Colored; Roman Catholic; African Methodist; Disciples of Christ; Methodist Episcopal; Cumberland Presbyterian; Presbyterian, South; Lutheran, General Council; Protestant Episcopal; and Primitive Baptist.

The total bonded debt of Texas on Sept. 1, 1901, was $3,989,400; sinking funds, school fund, $2,972,800; asylum fund, $299,400; net public debt, $717,200. The assessed valuation in 1900 was real estate, $666,904,488; personal property, $247,103,146; total valuation, $914,007,634. Tax rate, $3.466 per $1,000.

The Governor is elected for a term of two years and receives a salary of $4,000 per annum. Legislative sessions are held biennially and are unlimited in length. The Legislature has 31 members in the Senate and 128 in the House, each of whom receives $5.00 per day for the first 60 days and mileage, and $2.00 per day afterward during the session. There are 13 Representatives in Congress.

The first settlement in Texas was made at Matagorda by the French, who in 1689, were massacred by the coast savages. It afterward in conjunction with Coahuila became one of the States of the Mexican Confederation. Several colonies of American citizens, invited by the Mexicans, settled in the central and E. section, and gradually increased in numbers. When Santa Ana overthrew the federal system Zacatecas rebelled but was soon subdued. Texas then revolted from the Mexican government, and in 1836 declared itself independent. Santa Ana attempted to reduce it, but failed, being himself beaten and taken prisoner at the battle of San Jacinto by General Houston. Texas now managed its own affairs as an independent republic till 1845, when it became one of the United States, and thus gave rise to the war which proved disastrous to Mexico. It joined the Confederates during the Civil War, and was the last to submit. It was under military control till 1870, when it was restored to the Union.

Texas, The, a second-class, twin-screw, steel battleship of the United States navy. The "Texas" was built at the Norfolk navy yard; was launched June 28, 1892; and went into commission in the spring of 1895. She sailed from New York to join the "Flying Squadron" at Hampton Roads, April 6, 1898. From there she sailed with the squadron for Cuba on May 13. On June 15, she had her first fight in Cuban waters. It was with the Guantanamo battery and the "Texas" had a narrow escape from a submarine mine. On June 22 she silenced unaided the famous Socapa battery near Matamoras, to the W. of Santiago, and subsequently made an assault on the Cabanas battery. On July 3 she was a leader in the famous fight against the fleet of Cervera in the harbor of Santiago.

Texas, University of, a coeducational non-sectarian institution in Austin, Tex.; founded in 1883.

Textus Receptus, in Biblical criticism, a received text; one from which, as being the best accessible, translators made their version into the vernacular. The textus receptus of the Old Testament is the Hebrew text, from which the Authorized English Version of that portion of the Bible was made. The textus receptus of the New Testament is the Greek text,

from which the Authorized English Version was produced.

Thacher, John Boyd, an American reformer; born in Ballston, N. Y., Sept. 11, 1847; was graduated at Williams College in 1869; member of the New York Senate in 1884–1885, when he introduced the measures which resulted in the tenement house reforms; mayor of Albany, N. Y., in 1886–1887, 1896–1897; and chairman of the Bureau of Awards at the World's Columbian Exposition in Chicago in 1893.

Thackeray, William Makepeace, an English novelist; born in Calcutta, India, July 18, 1811. Being well provided for he chose the profession of an artist. He spent several years in France, Germany, and Italy, staying at Weimar, Rome, and Paris, but gradually became convinced that art was not his vocation, and having lost his fortune, he resolved to turn his attention to literature. His first appearance in this sphere was as a journalist. In 1846–1848 his novel of "Vanity Fair" was published in monthly parts, with illustrations by himself; and long before its completion its author was unanimously placed in the first rank of British novelists. His next novel was the "History of Pendennis," completed in 1850. In 1851 he delivered a course of lectures in London on the "English Humorists of the 18th Century," which were repeated in Scotland and America, and published in 1853. In 1855–1856 he delivered a series of lectures in the United States—"The Four Georges," and afterward in England and Scotland. In 1859 he became editor of the "Cornhill Magazine," but he retired from that post in 1862. He died in Kensington Palace Gardens, London, Dec. 24, 1863.

Thalamephorus, or **Thalamephoros,** in Egyptian antiquities, a kneeling figure supporting a shrine or inscribed tablet. These statues probably represent priests and initiated women who carried about in processions the statues of the gods.

Thales, the earliest of the Greek philosophers, called the father of philosophy; born in Miletus 640 B. C. He was the founder of the Ionic school, one of the chief sources of Grecian philosophy. He visited Egypt for instruction in the sciences professed by the priesthood. Besides abstract philosophy, he studied geometry and astronomy. His biographers mention among his services to astronomy a calculation of the length of the year, and of the interval between solstices and equinoxes. He left nothing in writing. He died about 550.

Thalia, one of the nine Muses. She was the patron of comedy, and is usually represented with the comic mask, and the shepherd's crook in her hand. One of the Graces was also called Thalia.

Thames, the most important river of Great Britain; usually said to rise about 3 miles S. W. of Cirencester in Gloucestershire, near a bridge over the Thames and Severn canal, called Thameshead Bridge, but is more properly formed by the Isis, Churn, Colne, and Leach, which have their sources on the E. side of the Cotswold Hills, and unite near Lechlade. Its total course is estimated at 250 miles. Its tributaries include the Windrush, Cherwell, Thame, Colne, Brent, Lea, and Roding, on the left; the Kennet, Loddon, Wey, and Mole, on the right. Thameshead Bridge is 376 feet above sea-level; the junction of the Colne above Lechlade is 243 feet. At London Bridge the width of the river is 266 yards, at Woolwich 490 yards, at Gravesend 800 yards, and 3 miles below, 1,290 yards. The depth of the river in the fair way above Greenwich to London Bridge is 12 to 13 feet, while its tides have a mean range of 17 feet and an extreme rise of 22 feet. By means of numerous canals immediate access is given from its basin to those of all the great rivers of England.

Thane, a title of honor or dignity among the Anglo-Saxons. In England a freeman not noble was raised to the dignity of a thane by acquiring a certain amount of land, by making three sea voyages, or by receiving holy orders. The thanes had the right of voting in the Witenagemot, not only of their own shires, but also of the whole kingdom, on important questions. There were two orders of thanes: The king's thanes, or those who attended at his court and held lands immediately from him, and ordinary thanes, or lords of the manor,

and who had a particular jurisdiction within their limits. On the cessation of his actual personal service about the king, the thane received a grant of land. After the Norman conquest, thanes and barons were classed together, and the title fell into disuse in the reign of Henry II.

Thanet, Octave, pseudonym of Alice French, an American novelist; born in Andover, Mass., March 19, 1850.

Thanksgiving Day, in the United States, an annual festival of thanksgiving for the mercies of the closing year. Practically it is a National harvest festival, fixed by proclamation of the President and the governors of States, and ranks as a legal holiday. In 1789 the Episcopal Church formally recognized the civil government's authority to appoint such a feast, and in 1888 the Roman Catholic Church also decided to honor a festival which had long been nearly universally observed — though nowhere with such zest as in the New England States, where it ranks as the great annual family festival, taking the place which in England is accorded to Christmas. The earliest harvest thanksgiving in America was kept by the Pilgrim Fathers at Plymouth in 1621. Congress recommended days of thanksgiving annually during the Revolution, and in 1784 for the return of peace — as did President Madison in 1815. Washington appointed such a day in 1789 after the adoption of the Constitution, and in 1795 for the general benefits and welfare of the nation. Since 1863 the Presidents have always issued proclamations appointing the last Thursday in November as Thanksgiving Day.

Thatch, straw, or any other dry vegetable substance, laid on the top of a building, rick, etc., to keep out the wet. There are many different materials used for thatching.

Thatcher, Henry Knox, an American naval officer; born in Thomaston, Me., May 26, 1806; entered the navy as midshipman in 1823; became lieutenant in 1833. He served in various parts of the world; and in 1855 attained the rank of commodore. He was in command of the sloop "Decatur" of the Pacific station; ordered to the sailing sloop "Constellation" on the Mediterranean station; and in 1862 commanded the first division of Commodore Porter's fleet in both attacks on Fort Fisher. After the war he commanded the Gulf Squadron till 1866 and the Pacific Squadron in 1866–1868; promoted rear-admiral in July, 1866; retired in 1868; and was port-admiral at Portsmouth, N. H., in 1869–1871. He died in Boston, Mass., April 5, 1880.

Thatcher, Oliver Joseph, an American historian; was graduated at Wilmington College, O., in 1878, and at the Union Theological Seminary in 1885; studied abroad in 1885–1888; was Professor of Ecclesiastical History at the United Presbyterian Theological Seminary in 1890–1892. He became assistant Professor of History at the University of Chicago in 1893, and was made associate Professor of Mediæval and English History there in 1896.

Thaxter, Mrs. Celia (Leighton), an American poet; born in Portsmouth, N. H., June 20, 1836. She spent her childhood and most of her later life at the Isles of Shoals. She died on the island of Appledore, Isles of Shoals, Aug. 26, 1894.

Thayer, Alexander Wheelock, an American writer on music and musicians; born in 1817. He contributed to the "Dictionary of Music"; was musical critic of the New York "Tribune"; afterward was consul at Trieste, 1859–1897. He died in Trieste, July 15, 1897.

Thayer, Eli, an American educator; born in Mendon, Mass., June 11, 1819; was graduated at Brown University in 1845. He originated and organized the "Emigrant Aid Company," and labored till 1857 to obtain the support of the Northern States for his plan to send anti-slavery settlers to Kansas. He was a member of Congress in 1856–1861, when he made his famous speeches on "Central American Colonization," "Suicide of Slavery," and the admission of Oregon. While the Civil War was in progress he proposed a plan for the military colonization of Florida as a war measure. Subsequently he urged his colonization scheme as a remedy for polygamy in Utah; wrote and published several books; and invented a hydraulic elevator, a safety steam

boiler, and an automatic boiler cleaner. He died in Worcester, Mass., April 15, 1899.

Thayer, Emma Homan, an American author; born in New York city, Feb. 13, 1842; was educated at Rutgers College and took a course in art at the National Academy of Design, New York city, where she exhibited numerous figure paintings; settled in Colorado in 1882; and made sketches of the flora of that vicinity. Her publications include: "Wild Flowers of Colorado," "Wild Flowers of the Pacific Coast," etc.

Thayer, James Bradley, an American educator; born in Haverhill, Mass., Jan. 15, 1831; was graduated at Harvard College in 1852 and at its law school in 1856; admitted to the bar in Boston the same year and practised there till 1873, when he became Royall Professor of Law at Harvard University. Professor Thayer was the author of many well-known law books. He died in Cambridge, Mass., Feb. 14, 1902.

Thayer, Joseph Henry, an American educator; born in Boston, Mass., Nov. 7, 1828; was graduated at Harvard University in 1850 and at the Andover Theological Seminary in 1857; was Professor of Sacred Literature at Andover Theological Seminary in 1864–1884; and in the latter year became Professor of New Testament Criticism and Interpretation in the Harvard Divinity School. His publications include: "Books and Their Use"; "The Change of Attitude Toward the Bible," etc. Died 1901.

Thayer, Martin Russell, an American jurist; born in Petersburg, Va., Jan. 27, 1819; was graduated at the University of Pennsylvania in 1840, and admitted to the Pennsylvania bar in 1842. He was a member of Congress in 1863–1867; judge of the district court of Philadelphia in 1867; and presiding judge of the Court of Common Pleas in 1874–1896. His publications include: "The Duties of Citizenship"; "What is Demanded of the United States by the Obligations of Duty and National Honor"; and many essays, speeches, reviews, etc.

Thayer, Sylvanus, an American military officer; born in Braintree, Mass., June 9, 1785; was graduated at Dartmouth College in 1807; and the United States Military Academy in 1808; and assigned to the Engineer Corps. He took part in the War of 1812–1815; was chief engineer on the Niagara frontier, at Lake Champlain, and in the defense of Norfolk, Va.; was promoted captain of engineers in 1813, and brevetted major in 1815 for distinguished services. In 1815 he was sent to Europe to examine military works and schools, and to study the operations of the allied armies before Paris; was recalled in 1817 on being appointed superintendent of the United States Military Academy, which post he held till 1833, when he resigned. During his administration he organized the institution on its present basis. He was brevetted lieutenant-colonel in 1823, major in 1828, and colonel in 1833. In 1838–1863 he was engaged in the construction of defenses in and about Boston harbor. He was promoted lieutenant-colonel of engineers in 1838, colonel in 1863, and brevet Brigadier-General May 31, 1863, and was retired the following day. He was a member of various scientific associations; gave $70,000 to found the Thayer School of Civil Engineering at Dartmouth College; $10,000 to Braintree for a public library; and bequeathed $300,000 for the endowment of an academy in Braintree. He was the author of "Papers on Practical Engineering" (1844). He died in South Braintree, Mass., Sept. 7, 1872. His body was reinterred in West Point, Nov. 8, 1877, where a statue was raised to his honor which bears the inscription, "Colonel Thayer, Father of the United States Military Academy."

Thayer, William Makepeace, an American clergyman; born in Franklin, Mass., Feb. 23, 1820. His books attained great popularity, several being reprinted abroad in German, French, Italian, Greek, Swedish, etc. Among his works are: "The Bobbin Boy," "The Pioneer Boy," "Ethics of Success," etc. He died in Franklin, Mass., April 7, 1898.

Thayer, William Roscoe, an American author; born in Boston, Mass., Jan. 16, 1859; studied in Europe, and was graduated at Harvard

University in 1881; became editor of the "Harvard Graduates' Magazine" in 1892. His publications include: "The Dawn of Italian Independence," "History and Customs of Harvard University," etc.

Theater, or **Theatre,** a building devoted to the representation of dramatic spectacles; a play-house. Among the Greeks and Romans theaters were the chief public edifices next to the temples, and many of them were of enormous size. The theater of Marcellus at Rome, the external walls of which are still in existence contained seats for 30,000 spectators. The Greek theaters were semi-circular; that part in which the chorus danced and sang was called the orchestra; behind this, and facing the audience, was the stage for the performers, who took part in the drama; the back of the stage being filled in by a permanent architecturally decorated scene. Roman theaters also formed semi-circles with seats rising in the form of an amphitheater for the spectators, at the chord of which was the stage (scena), with its permanent decorations. The orchestra, which was the space between the stage and the lowest tier of spectators, was employed by the Greeks for theatrical purposes, whereas the Romans turned it into seats for the senators. The topmost tier was generally crowned with a covered portico. The whole mass of the rows of seats was supported by a solid substructure of piers and arches, which formed passages of three stories one above another, retaining the circular form of the building; while externally they formed arcades, which were surrounded with half-columns or piers with entablatures over them. Modern theaters are generally constructed on a semi-circular or horse-shoe plan, with galleries running round the walls. The portion of a modern theater corresponding to the ancient orchestra is occupied mainly by spectators, the orchestra taking up only a small part of it next to the stage.

Theban Legion, according to tradition, a body composed of Christians, who submitted to martyrdom rather than attack their brethren during the persecution of the Emperor Maximin or sacrifice to the gods, about A. D. 286. Their leader, Maurice, has been canonized.

Thebes, the name of a celebrated Egyptian city, formerly the capital of Southern or Upper Egypt; called by the Egyptians Tuabu, by the Hebrews No-Amon, by the Greeks Thebæ, and at a later period Diospolis Magna. It lies in the broadest section of the valley of the Nile, in about latitude 26° N. The central situation of Thebes secured it from the attacks of the N. enemies of Egypt, and contributed to its prosperity; and here the worship of Amen-Ra arose in all its splendor; magnificent palaces and temples were built in its different quarters by the great monarchs of the Theban dynasties, and were added to by later kings, down to the time of the Ptolemies and Atonines, to the 2d century A. D. It was enriched by the spoils of Asia and the tributes of Ethiopia, and its fame and reputation had reached the early Greeks.

In the plenitude of its power it sent forth an army of 20,000 war chariots; but about 1100 B. C. the Bubastite and Tanite dynasties removed the capital again to the N., to Sais and Memphis, and thenceforth Thebes declined in importance.

Thebes, or **Thiva,** the capital of Bœotia in ancient Greece; founded, according to tradition, by a colony of Phœnicians, under Cadmus, 1550 B. C. or 1400 B. C. They were driven out by the Bœotians, 1124 B. C. Platæa, one of the Bœotian cities, revolted from Thebes 510 B. C., and applied for help to Athens. A war ensued between Thebes and Athens, in which the latter was victorious. This caused much animosity between Thebes and Athens, and in the Persian war, 480 B. C. the Thebans deserted the cause of Greece and fought against the Athenians at Platæa, 479 B. C. The Athenians invaded Bœotia, and established a democratic government in Thebes, 456 B. C. The Thebans were allies of the Spartans in the Peloponnesian war, 431 to 404 B. C. Sparta having claimed supremacy over the whole of Greece, the Thebans joined the Athenians, 395 B. C. The peace of Antalcidas put an end to the war, 387 B. C., and deprived Thebes of her supremacy over Bœotia. The Spartans, who treacherously seized the citadel of Thebes 382 B. C. were defeated at Leuctra, in July, 371 B. C., and the

Thebans regained their power in Greece. Thebes was razed to the ground by Alexander III., 335 B. C., after which it never again formed an independent State. Cassander restored the city 315 B. C., and it was taken by Demetrius 293 B. C., and again 290 B. C. The Thebans were defeated in an attempt to expel the Bulgarians from Greece in 1040, and their city was plundered by the Normans of Sicily in 1146. It was one of the most flourishing cities of Greece during the 10th and 11th centuries. The modern Thebes was almost wholly destroyed by an earthquake in 1893.

Theism, etymologically equivalent to belief in a god or gods, and as such opposed to Atheism, is now usually understood to mean the doctrine of the one, supreme, personal God, "in whom we live, and move, and have our being"— as distinguished from Polytheism, which recognizes more gods than one; from Pantheism, which denies the divine personality; from Agnosticism, which denies that we can know anything of God; and from Deism, which, etymologically equivalent to Theism, is generally defined as recognizing the personality of God, but denying His providence and active presence in the life of the world. Deism further explicitly rejects revelation and trinitarian conceptions of the godhead, while Theism may or may not accept these doctrines.

Themis, in Greek mythology, one of the Titanides, the daughter of Uranus and Ge, was after Metis married to Zeus, and bore him the Horæ — Eunomia ("Equity"); Dike ("Justice"), and Eirene ("Peace"), also the Moirai or Fates. She was regarded as the personification of order and justice, or of whatever is established by use and wont; and as such was charged by Zeus to convoke the gods, and preside over them when assembled, being likewise represented as reigning in the assemblies of men. In art Themis holds a cornucopia and a pair of scales.

Themistocles, an Athenian general and statesman; born about 520 B. C. He saw what was best for Athens when he turned the attention of his countrymen to the sea and convinced them that a powerful fleet was absolutely necessary for their welfare. A large sum of money, the produce of the silver mines of Laurium, which it was proposed to divide among the people, was devoted to its construction. During the war with Persia which followed, Themistocles, commanded the Athenian squadron, which almost totally destroyed the Persian fleet at Salamis. The victor of Salamis was now the foremost name in the minds and mouths of men. The rebuilding of the walls of Athens by his advice on a scale far larger than anything in existence aroused great uneasiness among the allies of Sparta, but, by a series of adroit stratagems, Themistocles succeeded in cajoling the ephors till the walls had reached a height sufficient for defense. But his popularity was now waning, and in 471 B. C. ostracism was demanded, and he was banished from Athens, and later took refuge at the Persian court, where he was treated with great distinction. He died in 449, according to some accounts, by his own hands.

Theocracy, that government of which the chief is, or is believed to be, God himself, the priests being the promulgators and expounders of the divine commands. The most notable theocratic government of all times is that established by Moses among the Israelites. The early colonial governments of Massachusetts and New Haven have sometimes been called theocracies, owing to the predominance of the religious element in their administration.

Theocritus, a Greek poet; born at Syracuse, who flourished about B. C. 280. We have under his name 30 idyls or pastoral poems, of which, however, several are probably by other authors. Most of his idyls have a dramatic form and consist of the alternate responses of musical shepherds. His language is strong and harmonious.

Theodolite, a most important instrument for measuring horizontal and vertical angles, but particularly adapted for accurately measuring the former. Its principle is identical with that of the altitude and azimuth instrument; the construction and purpose of the two, however, differ, the latter being employed for astronomical purposes, while the theodolite is used

for land surveying; but the letter instruments of this class may be employed for observing the altitude of celestial bodies. The vertical circle is not generally, however, of sufficient size, nor so graduated as to be available for very accurate astronomical observations.

When a point is to be viewed with the telescope, the telescope is moved so that the image of the point coincides with the intersection of the cross wires. The vertical limb is divided into degrees, and is capable of being read by means of the vernier and the microscope to thirds of a minute. A pair of plates, constituting at their edge the horizontal limb of the instrument, are free, when unclamped, to move independently of each other. The plate carries a magnetic compass and two spirit levels at right angles to each other, by means of which the circle may be brought accurately into the horizontal plane by raising or depressing it by means of the screws. The plate is furnished with two verniers, diametrically opposite to each other, the degrees marked on which are read off by the microscope. By the motion of the telescope, on the horizontal axis of the vertical limb, altitudes and vertical angles can be measured, while, by its motion on the vertical axis, the angular distances between two objects can be ascertained by the readings on the horizontal circle.

Theodora, the famous consort of the Byzantine emperor, Justinian I.; was, according to the dubious evidence of Procopius, the daughter of Acacius, a bear-ward at Constantinople; and had already been by turns actress, dancer, and harlot, when she won the heart of the austere and ambitious Justinian, to become in succession his mistress, his wife, and the sharer of his throne (527). Theodora was of less than middle height, and her complexion was pale, but such was her beauty that Procopius tells us "it was impossible for mere man to describe her comeliness in words, or imitate it in art." Never thereafter did the breath of scandal touch her name; she became Justinian's truest counsellor, bore a chief share in the work of government, and saved the throne by her high courage at the crisis of the Nika riots (532). She lavished her bounty on the poor, and especially on the unfortunate of her own sex, and died at 40 (548), her slender and graceful frame worn out by the anxieties of State.

Theodore of Mopsuestia, an exegete of the early Church; born in Antioch about the middle of the 4th century. About the year 383 he became a presbyter in Antioch, and about 392 he was chosen Bishop of Mopsuestia in Cilicia. Theodore wrote commentaries on almost all the books of Scripture, of which only remain, in the Greek, that on the Minor Prophets; in Latin translations, those on the lesser epistles of Paul, besides many fragments, especially on the epistle to the Romans. He died at peace with all men in 428 or 429.

Theodore II., King of Abyssinia; born in the province of Kwara in 1818; for many years a rebel; finally fought his way to the throne in 1855. He was a man of great parts, an inveterate foe of Islamism, a born ruler, and an intelligent reformer. But intolerance of any power save his own finally made a tyrant of him; and in consequence of the imprisonment of Consul Cameron and other British subjects he brought on himself a war with England, which ended, April 13, 1868, in the storming of Magdala and the death (supposedly by suicide) of Theodore.

Theodoret, a Church historian; born in Antioch about 390; early entered a monastery; and in 423 became Bishop of Cyrus, a city of Syria. Here he labored with the utmost zeal, and he himself claims to have converted over 1,000 Marcionites. As a foremost representative of the school of Antioch he became deeply involved in the great Nestorian and Eutychian controversies, and was finally deposed from office by the celebrated Council of Ephesus in 449. This was reversed by the general council of Chalcedon in 451, but Theodoret did not long survive his restoration, dying about 457. His works consist of commentaries on Canticles the Prophets, Psalms, and the whole of St. Paul's Epistles; a "History of the Church," from A. D. 325 to 429, in five books; "A Concise History of Heresies," etc.

Theodoric, King of the Ostrogoths; born in Pannonia in 455; son of Theodemir, King of the Ostrogoths of Pannonia. From his eighth to his 18th year he lived as a hostage with the Emperor Leo at Constantinople. Two years after his return he succeeded to the throne. In 493 after several bloody engagements, Theodoric induced Odoacer, who had assumed the title of King of Italy, to grant him equal authority. The murder of Odoacer at a banquet soon after opened the way for Theodoric to have himself proclaimed sole ruler. Theodoric ruled with great vigor and ability. He attached his soldiers by assigning them a third part of the lands of Italy, on the tenure of military service; while among his Italian subjects, whom he conciliated by introducing an improved administration of justice, he encouraged industry and the arts of peace. Though, like his ancestors, he was an Arian, he never violated the peace or privileges of the Catholic Church. He died in Ravenna, Italy, August 30, 526.

Theodosius I., the Great, son of Theodosius the Elder; one of the most notable and most capable of the later Roman emperors; born in Cauca, Spain, about 346; served under his father in Britain, Germany, and Africa, and won fame as a general by his exploits in Mœsia. On his father's death he retired to his native farm, whence he was summoned by Gratian to become his colleague in the purple and emperor in the East (379). He made Thessalonica his headquarters, and within four years, through patience and tact, after reviving the spirits of the imperial troops by small but decisive victories, he broke up the vast Gothic army, attached many of its members to the empire as faithful soldiers and allies under their own chiefs, and restored tranquillity to the troubled country S. of the Danube. He became sole Roman emperor in 394, and died on Jan. 17, 395 — a date memorable in the history of the later Roman empire, for almost immediately thereafter followed the barbarian invasions of Greece and Italy, which led directly to the subsequent Teutonic settlements in the S. and indirectly to the formation of the kingdoms of modern Europe.

Theology, a term applied by the classic authors to treatises on the nature and worship of the gods. Augustine quotes Eusebius and Varro as dividing theology into three kinds: the fabulous, that of the poets; the natural, that of the philosophers; and the political, that of the priests and the common people. The first and second kinds could be changed according to the will of the investigators; but the last could not be altered without national consent.

In Christianity, theology is the science which treats of divine things, especially of the relations of man to God. Doctrinal formulas are recognized in Scripture, but the term theology does not occur, though the elements of which it is compounded are found in close connection. Theology is primarily divided into natural and supernatural, or revealed; the former deduced by reason from a survey of the universe, the latter founded on revelation. Natural religion is recognized in Scripture (Ps. xix: 1–6, Rom. i: 19, 20), and is held to establish the being, power, wisdom, and goodness of God, the obligation of His moral law and the folly and danger of transgressing it, and the immortality of the soul. Revealed religion is considered to superadd to these doctrines those of the Trinity, the creation and fall of man, the penalty of sin, the mission, work, and atoning death of Christ, His resurrection, ascension, and second advent, with many other doctrines.

Theophilus, a legendary coadjutor-bishop at Adana in Cilicia, who, when deposed from his office through slanders, gave his soul in bond to the devil, and consequently was reinstated the next morning. But he was soon overtaken with remorse, and through 40 days' fasting and prayers prevailed on the Virgin to make intercession for him. She tore the bond from the devil, and laid it upon the breast of the repentant sinner as he lay asleep in the church. Theophilus then made a public confession of his crime and of the mercy of the Virgin, and died three days after.

Theophrastus, a Greek philosopher; often called the "father of botany"; a native of Eresus, in Les-

bos; flourished in the 5th century B. C. He became a pupil of Plato at Athens, and made, at the academy, the acquaintance of Aristotle; but he left the academy after Plato's death, and was absent from Athens for some years. On his return, he gladly studied philosophy under his friend Aristotle, who had so high a regard for him as to bequeath to him his library, and to name him his successor. Theophrastus had extraordinary success as head of the Lyceum, and was attended, it is said, by 2,000 disciples. Among them were Demetrius, Phalereus, and Menander. A charge of impiety was brought against him, but he successfully defended himself, and generously interposed to save his adversary from the popular vengeance. He was, however, compelled to leave Athens in 305 B. C., under the law which banished all philosophers. The law was soon repealed and he returned to his post and peacefully taught and commented on the system of his master, Aristotle, till his death.

Theorbo, in music, an old stringed instrument resembling the lute in form or tone. It had two necks, to the longest of which the bass strings were attached. It was employed for accompanying voices, and was in great favor during the 17th century.

Theorem, in geometry, a proposition to be proved; a statement of a principle to be demonstrated; that is, the truth of which is required to be made evident by a course of reasoning called a demonstration.

Theoria Motus, or **Theoria Motus Corporum Cœlestium,** the names by which is usually quoted the work of Gauss, in which he first showed the method of computing an orbit from three determinations of a planet's or comet's position, and thus rescued astronomers from the danger of losing the newly discovered asteroid Ceres after it had disappeared in the region of the sun.

Theosophy, a name which since the time of Ammonius Saccas, in the 3d century after Christ, has been used in the West to cover various schools of religious philosophy, which all unite in the fundamental conception that man, in his innermost nature, is a spiritual being, one in his essence with the Universal Spirit manifested in and through the universe. In this general sense it includes mystics differing from one another in details.

Therapeutæ, an ascetic sect, supposed to live chiefly on Lake Mareotis, near Alexandria. Their discipline resembled that of the Essenes, but was more severe in food and in the preference for the solitary life to the common fellowship. Throughout the week each lived in his lonely dwelling, but on the Sabbath they assembled for worship.

Therapeutics, the science which treats of the healing of diseases. It deals with the form, manner, and time in which drugs should be administered, if needful to administer them at all; it instructs how to avoid incompatible combinations, and classifies remedial agents. Therapeutics also investigates the laws of health, and how it can be preserved.

Thermo Barometer, an instrument for measuring altitudes by means of determining the boiling point of water. They consist essentially of a small metallic vessel for boiling water, fitted with very delicate thermometers, which are only graduated from 80° to 100°; so that each degree occupying a considerable space on the scale, the tenths, and even the hundredths of a degree, may be estimated, and thus it is possible to determine the height of a place by means of the boiling point to within about 10 feet.

Thermodynamic Engine, any form of heat engine (as gas or steam engines) by means of which a percentage of the heat lost by one body called the source, on account of its connection with another body called the refrigerator, is converted into kinetic energy or mechanical effect, and made available for the performance of work.

Thermodynamics, the branch of theoretical physics which treats of heat as a mechanical agent, and is the basis on which the modern doctrine of energy is built. Thermodynamics is based on two laws. The first law enunciates heat to be a form of energy and subject to the conservation principle. A given quantity of work can always be transformed into an equivalent quantity of heat; but in transforming heat into work a cer-

tain limitation exists which is expressed in the second law of thermodynamics. This law asserts that it is impossible, by physical processes, to transform any part of the heat of a body into mechanical work except by allowing heat to pass from that body to another at a lower temperature.

Thermoelectricity, electricity produced at the junction of two metals, or at a point where a molecular change occurs in a bar of the same metal, when the junction or point is heated above or cooled below the general temperature of the conductor. Thus when wires or bars of metal of different kinds, as bismuth and antimony, are placed in close contact, end to end, and disposed so as to form a periphery or continuous circuit, and heat then applied to the ends or junctions of the bars, electric currents are produced.

Thermograph, a thermometer provided with a recording device. The form generally used has a crescent shaped bulb, filled with alcohol and hermetically sealed. A change in the temperature affects the curve of the bulb, and the alteration of form is communicated to a series of multiplying levers, which in turn exaggerate the motion, and give impetus to a recording pen. This pen makes a tracing on the ruled paper of a moving cylinder.

Thermometer, in physics, an instrument for measuring intensity of heat, or temperature, by means of expansion of a liquid or gas. Mercury is generally employed, and an ordinary thermometer consists of a spherical or cylindrical glass bulb at the end of a very fine tube, the bulb being completely filled and the tube partly filled, with mercury, while the space above the mercury contains only a small quantity of mercury vapor, which offers no resistance to the expansion of the mercury. A rise of temperature is indicated by a rise of the mercury in the tube, owing to expansion; and, conversely, a fall of temperature is indicated by a fall of the mercury in the tube. On the Centigrade or Celsius thermometer (used by scientific men all over the world and in general use on the continent of Europe), the freezing point is 0°, and the boiling point 100°; on the Reaumur thermometer the freezing point is 0° and the boiling point 80°; on the Fahrenheit thermometer (in general use in the United States and England), the freezing point is 32°, and the boiling point is 212°. Degrees above 0° are termed + degrees, while those below 0° are termed — degrees. Mercury can only be used for temperatures between —40° and + 675°, since it freezes at 40° and boils at 675°. For lower temperatures alcohol is used; and for high temperatures air thermometers are employed, in which changes of temperature are measured by the expansion or contraction of a known volume of air.

Thermometric Alarm, an instrument to release an alarm when a dangerous heat is reached in an apartment; a form of fire alarm.

Thermometric Analysis, in chemistry, a term applied to certain approximate methods of analysis, depending on the observation of the temperature when a phenomenon takes place, or of the changes of temperature accompanying chemical reactions.

Thermometric Ventilator, a chimney valve consisting of a circular disk accurately balanced on a spindle. On one side of the disk is an inverted siphon, open at one end and having a bulb at the other. The lower part of the siphon tube contains mercury, and the bulb is full of air. Any increase of temperature expands the air in the bulb, depresses the mercury and, causing it to rise in the other arm of the tube, opens the valve, thus allowing the air to pass.

Thermopylæ, a famous pass leading from Thessaly into Locris, and the only road by which an invading army can penetrate from Northern into Southern Greece. It lies S. of the present course of the river Spercheius, between Mount Œta and what was anciently an impassable morass bordering on the Maliac Gulf. In the pass are several hot springs, from which Thermopylæ probably received the first part of its name. Thermopylæ has won an eternal celebrity as the scene of the heroic death of Leonidas and his 300 Spartans in their attempt to stem the tide of Persian invasion (480 B. C.). Again in

279 B. C. Brennus, at the head of a Gallic host, succeeded, through the same treachery that had secured a victory to Xerxes, in forcing the united Greeks to withdraw from the pass.

Thermopylæ of America, a phrase applied to Fort Alamo, Tex.; in allusion to the heroic defence of it, made in 1836, by a small body of Texans against a force of Mexicans 10 times their number. During the subsequent struggle for independence the Texan war cry was "Remember the Alamo!" the Mexicans having murdered the six defenders of the fort whom they found alive on its surrender.

Thesis, a brief statement of an opinion, view, or proposition, which he who states it is prepared to prove by detailed argument. In a special academic sense thesis means the dissertation which candidates for certain university degree are obliged to give in, and which in former times they were required to defend publicly against all comers.

Thessalonians, Epistles to the, the Pauline epistles. The first epistle to the Thessalonians, the earliest extant epistle of the Apostle Paul, was written at Corinth probably about the beginning of the year A. D. 53, or, at latest, in A. D. 54, within a year and a half of the founding of the Church at Thessalonica under the circumstances related in Acts xvii: 1–10. Some time after leaving Thessalonica, the apostle had heard of "sufferings" to which his converts there had been subjected by their unbelieving fellow-countrymen, and there was some cause for fear lest "the tempter" had "tempted" them from their faith. He accordingly sent Timothy from Athens to learn further about their state, and to "establish" and "comfort" them. Timothy brought back to the apostle, then in Corinth, a fairly satisfactory account of their faith and loyalty, but mentioned some matters of Christian doctrine and life in which they were deficient; hence the epistle.

Thessaly, the largest division of ancient Greece; lay S. of Macedonia and E. of Epirus; being separated from the latter by Mount Pindus, and from the former by the Cambunian Mountains; the Maliac Gulf and Mount Œta bounding it on the S. I is a vast plain shut in on every sid by mountains; on the N. and W. b those already named, on the S. b Mount Othrys, and on the E. b Mounts Pelion and Ossa, the onl opening being the Vale of Tempe i the N. E., between Ossa and Olympus This plain is drained chiefly by th Peneus river (now Salambria) an its tributaries, and is the most fertil in all Greece. Thessaly was origi nally inhabited by so-called Pelasgians who, however, were either expelled o reduced to slavery by Dorian immi grants from the more rugged region o Epirus about 1000 B. C. About 37 B. C. Jason, tyrant of Pheræ, wa elected Tagus (chief-magistrate) o all Thessaly. The rule of Jason' successors became so unbearable tha aid was sought from Philip of Mace don, who in 344 subjected the countr to Macedonia. Thessaly remaine subject to the Macedonian kings til the victory of Cynoscephalæ, in 19 B. C., brought it under the protectio of Rome. Under the emperors Thes saly was united with Macedonia, bu after Constantine it was a separat province. In A. D. 1204 with othe portions of the Eastern Empire, i came under the dominion of the Vene tians, and in 1355 was taken by th Turks. In 1881 Turkey agreed t cede, and Greece to accept, Thessal S. of the ridge of mountains formin the watershed of the Salambria (th ancient Peneus), by much the larges and most fertile section of the prov ince.

Thetis, in mythology, one of the se deities, who was courted by Neptun and Jupiter. But when the gods were informed that the son she would brin forth must become greater than hi father, they ceased their solicitations and Peleus, the son of Æacus, wa permitted to gain her hand.

Thief, in ordinary language, on who steals or is guilty of theft; on who takes the goods or personal prop erty of another without his knowl edge or consent, and without any in tention of returning it; one who de prives another of property secretly o without open force as opposed to a robber who uses force or violence.

Thiers, Louis Adolphe, a Frenc statesman; born in Marseilles, France

April 16, 1797. In the government of Louis Phillipe, Thiers held several offices, till (1840) he found himself at the head of the ministry for a few months, and then retired into private life. After the revolution of 1848 he was elected deputy to the Assembly, and voted for the presidency of Louis Napoleon, but was ever after one of his fiercest opponents; and at the coup d'etat (Dec. 2, 1851) he was arrested and banished. Returning to France in the following year, he remained in comparative retirement till 1863, when he was elected one of the deputies for Paris.

During the terrible crisis of 1870-1871 he came to the front as the one supreme man in France. After the fall of Paris he was returned to the National Assembly, and on Feb. 17, 1871, he was declared chief of the executive power. The first duty imposed on him as such was to assist in drawing up the treaty of peace, whereby France lost Alsace and Lorraine and agreed to pay an enormous indemnity; his second was to suppress the Communist insurrection, which broke out within three weeks of the signing of the treaty. This done, his next task was to free the soil as quickly as possible from the invaders by the payment of the ransom, which also was effected in an incredibly short space of time. The Assembly in August, 1871, prolonged his tenure of office and changed his title to that of President. In November, 1872, Thiers declared himself in favor of the republic as a definitive form of government for France, and thus to some extent brought about the crisis which resulted in his being deprived of the presidency.

Thilly, Frank, an American educator; born in Cincinnati, O., Aug. 8, 1865. He was instructor in logic and history of philosophy at the Sage School of Philosophy, Cornell University, in 1892-1893. In the latter year he was made Professor of Philosophy at the University of Missouri. He is the author of "Liebniz's Controversy with Locke"; "An Introduction to Ethics," etc.

Thimble, a metallic cap or sheath used to protect the end of the finger in sewing. Seamstresses use a thimble having a rounded end with numerous small pits or indentations. Those used by tailors are open at the end. The manufacture of thimbles is very simple. Coin silver is mostly used, generally silver dollars, which are melted, and cast into solid ingots. These are rolled into the required thickness, and cut by a stamp into disks of any required size. A solid metal bar the size of the inside of the intended thimble, moved by powerful machinery up and down in a bottomless mold of the size of the outside of the thimble, bends the circular disks into the thimble shape as fast as they can be placed under the descending bar. The work of brightening, polishing, and decorating is done on a lathe.

Thirlwall, Connop, an English bishop and historian; born in Stepney, Middlesex, England, Jan. 11, 1797. For 34 years he labored with the utmost diligence in his diocese, building churches, parsonages, and schools, and augmenting poor livings (to the extent of $150,000 from his own pocket); and, though he wrote no great work, his 11 "Charges" remain an enduring monument of breadth of view and soundness of judgment in reference to all ecclesiastical controversies of one generation. He was appointed chairman of the Old Testament Revision Committee, and resigned his see in May, 1874, retiring to Bath, where he died July 27, 1875.

Thirwall's massive understanding, vast learning, and fundamental breadth and fairness of mind were a combination of enormous value to the Church of England. Few men have left a more pleasing though unconscious monument of noble character than the beautiful series of letters to a young lady — the "Letters to a Friend," edited by Dean Stanley in 1881.

Thirst, a sensation resulting from a peculiar state of the system, but especially of the mucous membrane of the fauces, usually caused by an insufficient supply of liquid. In cases of extreme thirst there is a peculiar sense of clamminess in the mouth and pharynx, which, with the other disagreeable feelings, is almost immediately relieved by the introduction of liquid into the stomach, where it is ab-

sorbed by the veins. That the thirst is relieved by the absorption of the fluid, and not by its action as it passes over the mucous membrane, which seems to suffer most, is proved by the facts (1) that injection of liquids into the stomach through a tube (in cases of wounded œsophagus), and (2) the injection of thin fluids, as water, into the blood, remove the sensation of thirst.

Thirty Years' War (1618 to 1648), a war in Germany, at first a struggle between Roman Catholics and Protestants. Subsequently it became a struggle for political ascendency in Europe. On the one side were Austria, nearly all the Roman Catholic princes of Germany, and Spain; on the other side were, at different times, the Protestant powers and France. The occasion of this war was found in the fact that Germany had been distracted ever since the Reformation by the mutual jealousy of Catholics, Lutherans, and Calvinists. Certain concessions had been made to the Protestants of Bohemia by Rudolph II. (1609), but these were withdrawn by his successor Matthias in 1614, and four years afterward the Bohemian Protestants were in rebellion. Count Thurn at the head of the insurgents repeatedly routed the imperial troops, compelling them to retire from Bohemia, and (1619) invaded the archduchy of Austria. Matthias having died in 1619, he was succeeded by Ferdinand II., who was a rigid Catholic, but the Protestants elected as their king Frederick, Elector Palatine, who was a Protestant. Efforts at mediation having failed, the Catholic forces of Germany marched against Frederick, who, with an army of Bohemians, Moravians, and Hungarians, kept the field till Nov. 8, 1620, when he was totally routed at Weissenberg, near Prague, by Duke Maximilian of Bavaria. The Protestant cause was now crushed in Bohemia, and the people of that province suffered cruel persecution. The dominions of Frederick, the Palatinate of the Rhine included, were now conquered, the latter being occupied by Count Tilly, assisted by the Spaniards under Spinola. At the Diet of Ratisbon (March, 1623) Frederick was deprived of his territories, Duke Maximilian receiving the Palatinate. Ferdinand, whose succession to the throne of Bohemia was thus secured, had now a favorable opportunity of concluding a peace, but his continued intolerance toward the Protestants caused them to seek foreign assistance, and a new period of war began. Christian IV. of Denmark, induced partly by religious zeal and partly by the hope of an acquisition of territory, came to the aid of his German co-religionists (1624), and being joined by Mansfeld and Christian of Brunswick, advanced into Lower Saxony. There they were met by Wallenstein, Duke of Friedland, who in 1626 defeated Mansfeld at Dessau, while Tilly was also successful in driving Christian back to Denmark. In the peace of Lubeck which followed (May, 1629) Christian of Denmark received back all his occupied territory, and undertook not to meddle again in German affairs. After this second success, Ferdinand again roused his people by an edict which required restitution to the Roman Catholic Church of all church lands and property acquired by them since 1552.

To the assistance of the Protestants of Germany came Gustavus Adolphus, King of Sweden, who landed (1630) with a small army on the coast of Pomerania. Joined by numerous volunteers, and aided by French money, he advanced, and routed Tilly at Breitenfeld (or the battle of Leipsic, September, 1631), victoriously traversed the Main and the Rhine valleys, defeated Tilly again near the confluence of the Lech and the Danube (April, 1632), and entered Munich. Meanwhile the emperor sought the aid of Wallenstein, by whose ability and energy Gustavus was obliged to retire to Saxony, where he gained the great victory of Lutzen (November, 1632), but was himself mortally wounded in the battle. The war was now carried on by the Swedes under the chancellor Oxenstierna, till the rout of the Swedish forces at Nordlingen (September, 1634) again gave to the emperor the preponderating power in Germany. The Elector of Saxony, who had been an ally of Gustavus, now made peace at Prague (May, 1635), and within a few months the treaty was accepted

by many of the German princes. The Swedes, however, thought it to their interest to continue the war, while France resolved to take a more active part in the conflict. Thus the last stage of the war was a contest of France and Sweden against Austria, in which the Swedish generals gained various successes over the imperial forces, while the French armies fought with varied fortunes in West Germany and on the Rhine. Meanwhile the emperor had died (1637), and had been succeeded by his son, Ferdinand III. The struggle still continued till in 1646, the united armies of the French under the great generals Turenne and Conde, and the Swedes advanced through Suabia and Bavaria. The combined forces of Sweden, Bavaria, and France were then about to advance on Austria, when the news reached the armies that the peace of Westphalia (1648) was concluded, and that the long struggle was ended.

Thisbe, in classical legend, a Babylonish maiden beloved by Piramus. They lived in contiguous houses, and as their parents would not let them marry, they contrived to converse together through a hole in the garden wall. On one occasion they agreed to meet at Ninus's tomb, and Thisbe, who was first at the spot, hearing a lion roar, ran away in a fright, dropping her garment on the way. The lion seized the garment and tore it. When Piramus arrived and saw the garment, he concluded that a lion had eaten Thisbe, and he stabbed himself. Thisbe, returning to the tomb, saw Piramus dead, and killed herself also. The story is travestied in "The Midsummer Night's Dream," by Shakespeare.

STEMLESS THISTLE.

Thistle, the common name of prickly plants. There are numerous species, most of which are inhabitants of Europe. Some dozen species of thistle are common in the United States, spreading from New England to Florida; Canada thistle is one of the severest pests of the farmer.

Thistle, Order of the, a Scotch order of knighthood, sometimes called the Order of St. Andrew. It was instituted by James VII. (James II. of England), in 1687, when eight knights were nominated. It fell into abeyance during the reign of William and Mary, and was revived by Queen Anne in 1703. As at present constituted, the order consists of the British sovereign and knights to the number of 16.

STAR, COLLAR, AND ST. ANDREW OF THE ORDER OF THE THISTLE.

Thistle Crown, a gold coin of James VI. of Scotland (James I. of England), of the value of 97.3 cents. It bore on the obverse a rose, and on the reverse a thistle, both crowned.

Thistlewood Conspiracy, a conspiracy formed in London in 1820 to

assassinate the ministers of the crown at a cabinet dinner, and excite an insurrection in the city, so called from the name of its ringleader, Arthur Thistlewood, a profligate whom ill fortune had rendered desperate. The plot was discovered by a government spy, and the conspirators were seized in a garret in Cato street, Feb. 23, the day fixed on for the execution of the project. Thistlewood and four others were executed May 1, 1820.

Thoburn, James Mills, an American clergyman; born in St. Clairsville, O., March 7, 1836; engaged in missionary work in India in 1859. He was presiding elder at the India Conference in the United States in 1886–1888, and in the latter year was elected missionary bishop of India and Malaysia. He was author of several books along missionary lines.

Thomas, Arthur Lloyd, an American banker; born in Chicago, Ill., Aug. 22, 1851; was secretary of the Utah Treasury, and was supervisor of the census of Utah in 1880; governor of Utah in 1889–1893; and in January, 1898, became postmaster of Salt Lake City.

Thomas, Calvin, an American educator; born near Lapeer, Mich., Oct. 28, 1854; was instructor in the University of Michigan in 1878–1881; assistant professor there in 1881–1886, and full Professor of Germanic Languages and Literatures in 1886–1896, when he became Professor of German at Columbia University. His publications include "A Practical German Grammar"; "Goethe and the Conduct of Life," etc.

Thomas, Cyrus, an American archæologist; born in Kingsport, Tenn., July 27, 1825. He became Professor of Natural Science in the Southern Illinois Normal University in 1873; State entomologist of Illinois in 1875–1882. Besides reports, he wrote many scientific books.

Thomas, Edith Matilda, an American poet; born in Chatham, O., Aug. 12, 1854. She contributed to many periodicals, and published in book form: "The Inverted Torch"; "Fair Shadow Land"; etc.

Thomas, Frederick William, an American author; born in Charleston, S. C., in 1811. He was Professor of English Literature in the University of Alabama. He contributed much in prose and verse to periodicals, and published several books. He died in Washington, D. C., Sept. 30, 1866.

Thomas, George Henry, an American military officer; born in Southampton co., Va., July 31, 1816; was graduated at the United States Military Academy in 1836; took part in the Florida War in 1840–1842, and the war with Mexico in 1846–1848; participated in the Seminole campaign in 1849–1850; and served on frontier duty in California and Texas in 1850–1860. At the outbreak of the Civil War he was made a colonel of cavalry and took part in the operations in the Shenandoah valley in the summer of 1861, and later as commander of a division in the Army of the Ohio was actively engaged in the operations in Tennessee and Mississippi. Afterward, under General Rosecrans, as commander of a corps, saved the Union army from utter defeat at Chickamauga, and gained the nation's gratitude. In 1863, as commander of the Army of the Cumberland, he bore an important part in the battle of Missionary Ridge and in the Atlanta campaign under Sherman. In October, 1864, he was sent to Nashville to oppose the Confederates under Hood, whom he finally defeated before Nashville, Dec. 15, 1864. For his services in these operations he was promoted Major-General U. S. A. In 1868 was placed in command of 4th Military Division, comprising the territory of the Pacific and Alaska, and continued in this capacity till his death, in San Francisco, Cal., March 28, 1870.

Thomas, Isaiah, an American publisher; born in Boston, Mass., Jan. 19, 1749. He established and printed the "Massachusetts Spy," 1770–1801; imported and used the first font of music type; established the "Massachusetts Magazine" (1789–1796); printed noted editions of the Bible and Watts's "Psalms and Hymns." He died in Worcester, Mass., April 4, 1831.

Thomas, Jesse Burgess, an American clergyman; born in Edwardsville, Ill., July 29, 1832. He accepted the chair of Church history at

Newton Theological Institution in 1888. He is the author of "The Old Bible and the New Science"; "The Mould of Doctrine"; etc.

Thomas, John, an American military officer; born in Marshfield, Mass., in 1725; became colonel of provincials in 1759, and in 1760, in command of a regiment under General Amherst, was engaged in operations against the French at Lake Champlain and at Montreal. During the Revolutionary War he raised a regiment of volunteers and was appointed Brigadier-General; took part in the siege of Boston; forced the British to evacuate Dorchester; and participated in the Canadian campaign. He died in Chambly, Canada, June 2, 1776.

Thomas, John, an Anglo-American religious reformer; born in London, England, April 12, 1805; came to the United States in 1850; joined the Campbellite Baptists, which sect he left to found the Christadelphians; returned to England in 1860, and lectured extensively on the new sect, converting many. He was the author of many books. He died in Jersey City, N. J., March 5, 1871.

Thomas, John Robert, an American jurist; born in Mt. Vernon, Ill., Oct. 11, 1846. He was State attorney of Illinois for four years and held a seat in Congress in 1879–1889, serving as a member of the Committee on Naval Affairs. Owing to his interest in the new navy he was called the "father of the modern American navy." In 1897 he was made judge of the United States Court for the Indian Territory.

Thomas, John R., an American song writer; born in Newport, Wales, in 1830; came to the United States at an early age, taught music, and sang in opera and oratorio. His songs were highly popular. Among the best known are: "Some One to Love"; "'Tis but a Little Faded Flower"; "The Flag of the Free"; "The Mother's Prayer"; and "No Crown Without the Cross." He died in 1896.

Thomas, Joseph, an American lexicographer; born in Cayuga co., N. Y., Sept. 23, 1811. In 1851–1852 appeared his first book of "Etymology," followed by an edition of Oswald's "Etymological Dictionary." In 1854 he prepared "A New and Complete Gazetteer of the United States"; and in 1855 "A Complete Geographical Dictionary of the World." In 1864 appeared his comprehensive "Medical Dictionary"; and in 1870 his "Universal Pronouncing Dictionary of Biography and Mythology," which occupies a high place among books of reference. He died in Philadelphia, Pa., Dec. 24, 1891.

Thomas, Theodore, a German-American musician; born in Esens, Hanover, Germany, Oct. 1, 1835. He first played in public at the age of six. In 1845 his family removed to the United States, and for two years he played violin solos at concerts in New York. His first symphony concerts were given in 1864–1865, and extended (excepting from 1869 to 1872) till he left New York, in 1878, to take the direction of the College of Music at Cincinnati. He remained in Cincinnati till 1880, when he resigned this position and returned to New York. With brief intervals he was conductor of the Brooklyn Philharmonic Society from 1862–1891, and of the New York Philharmonic Society from 1877–1891. In 1893 he was musical director at the World's Fair, till Aug. 10, when he resigned.

Thomas, Theodore Gaillard, an American physician; born in Charleston, S. C., Nov. 21, 1831. He was Professor of Gynæcology and Obstetrics at the College of Physicians and Surgeons, New York city, for many years. He was the author of "Diseases of Women" which has been translated into German, French, Spanish, Italian, and Chinese.

Thomas, William Davy, an American educator; born Jan. 5, 1844. He was made superintendent of the missions of the Presbyterian Church in the United States; became Professor of Mental and Moral Science at Gale College, and afterward its president.

Thomas, William Widgery, Jr., an American diplomatist; born in Portland, Me., Aug. 26, 1839; was graduated at Bowdoin College in 1860. During the 60's he became successive-

ly vice-consul-general at Constantinople; acting consul at Galatz, Moldavia; and consul at Gothenburg, Sweden. He was United States minister to Norway and Sweden in 1883–1885 and in 1889–1894; and was again appointed to that office in 1897.

Thomas, St., called Sydamus, or the twin, one of the 12 apostles of Jesus Christ. He is presumed to have been a native of Galilee. He is distinguished in sacred history by his disbelief of the resurrection of his master; on which Jesus vouchsafed to permit him to put his fingers into His wounds, and Thomas exclaimed, "My Lord and my God!" He is supposed to have suffered martyrdom in Coromandel, India, where there are still Christian churches which are called by his name.

Thompson, Almon Harris, an American geographer; born in Stoddard, N. H., Sept. 24, 1839. He was appointed geographer of the United States Geological Survey in 1882.

Thompson, Augustus Charles, an American clergyman; born in Goshen, Conn., April 30, 1842. He was a delegate to the Mildmay Missionary Conference in 1878 and the London Missionary Conference in 1888. Died 1901.

Thompson, Charles Lemuel, an American clergyman; born in Allentown, Pa., Aug. 18, 1839. He was editor of "The Interior," Chicago, in 1877–1879. In 1888 he was elected Moderator of the Centennial General Assembly of the Presbyterian Church.

Thompson, Charles Miner, an American journalist; born in Montpelier, Vt., March 24, 1864; was graduated at Harvard College in 1886; was literary editor of the Boston "Advertiser" and later associate editor of the "Youth's Companion." He has written: "The Nimble Dollar"; "Life of Ethan Allen," etc.

Thompson, Denman, an American actor; born in Girard, Pa., in 1833; began his professional career as a dancer, Irish character and general utility man. Later he starred in the comedy "Joshua Whitcomb," a play of his own, which was afterward remodeled and presented under the title "The Old Homestead."

Thompson, Elizabeth, an American philanthropist; born in Lyndon, Vt., Feb. 21, 1821; was married to Thomas Thompson, a Boston millionaire, in 1845, and on his death in 1869 fell heir to the whole income of his immense estate. She gave large sums to the cause of temperance; founded the town of Long Mont, Kas., giving 640 acres of land and $300 to each colonist; and contributed largely to the purchase of the Vassar College telescope. She presented Frank B. Carpenter's painting of the "Signing of the Emancipation Proclamation by President Lincoln in the presence of his cabinet" to Congress. She died in Littleton, N. H., July 20, 1899.

Thompson, Hugh Miller, an American clergyman; born in County Londonderry, Ireland, June 5, 1830; was Professor of Church History at the Nashotah Theological Seminary and editor of the "American Churchman," Chicago, in 1860–1870. He was consecrated Bishop of Mississippi in 1887. Died Nov. 8, 1902.

Thompson, Henry Adams, an American educator; born in Stormstown, Pa., March 23, 1837; was Professor of Mathematics at Western College, Iowa, in 1861–1862, and of the same at Otterbein University in 1862–1867. He was president of the latter institution in 1872–1886. He was the Prohibition candidate for governor of Ohio in 1877, and was nominated for vice-president on the ticket with Neal Dow in 1880. He became an editor of the Sunday-school literature of the United Brethren Church in 1893, and editor-in-chief in 1897.

Thompson, (James) Maurice, an American author; born in Fairfield, Ind., Sept. 9, 1844. He was State geologist of Indiana, 1885–1889. He wrote nature studies. He published in book form: "Hoosier Mosaics," "The Witchery of Archery," "A Tallahassee Girl," "Alice of Old Vincennes," etc. He died Feb. 15, 1901.

Thompson, John Polk, an American inventor; born in Glasgow, Scotland, in 1838; came to the United States in 1848, and invented 14 distinct mechanical devices, each of which produced a radical improvement

in methods of carding, stop and let-off motions, and self-threading shuttles. He died in Olneyville, R. I., Sept. 16, 1899.

Thompson, Launt, an American sculptor; born in Abbeyleix, Ireland, Feb. 8, 1833. His productions include a bust entitled "Elaine"; "Morning Glory," a medallion; statues of Abraham Pierson at New Haven, Conn., and of Winfield Scott, at Washington, D. C.; portrait busts of William C. Bryant in the Metropolitan Museum, New York city, Edwin Booth as Hamlet, Charles L. Elliott, Samuel F. B. Morse, etc.

Thompson, Richard Wigginton, an American lawyer; born in Culpeper co., Va., June 9, 1809. He was member of Congress from Indiana in 1841, and also in 1847. In 1877, he became Secretary of the Navy, but retired in 1881 to become chairman of the American Committee of the Panama Canal Company. His publications include: "The Papacy and the Civil Power"; "Recollections of Sixteen Presidents, From Washington to Lincoln," etc. He died in Terre Haute, Ind., Feb. 9, 1900.

Thompson, Robert Ellis, an American educator; born near Lurgan, Ireland, April 5, 1844. He was Professor of Latin and Mathematics in the University of Pennsylvania in 1868–1871, of Social Science there in 1871–1881, and of History and English in 1881–1892. He was editor of the "Pennsylvania Monthly" in 1870–1881, and of the "American Weekly" in 1881–1892. His publications include "Social Science and National Economy"; "Protection to Home Industry," etc.

Thompson, Vance, an American author; born in Cincinnati, O., April 17, 1863; was graduated at Princeton University in 1883; was the editor and founder of "M'lle New York," and wrote "The City of Torches"; "A Flash of Honor"; "Killing the Mandarin"; "The Carnival of Destiny," etc., besides a number of plays and pantomimes.

Thompson, Will L., an American song-writer; born in Beaver co., Pa., Nov. 7, 1847. His works include "Thompson's Class and Concert"; "Thompson's Popular Anthems"; about 100 popular songs, such as "Gathering Shells on the Sea Shore"; "Drifting with the Tide"; "Come Where the Lilies Bloom"; and contributions to almost every hymnal and gospel song collection published in the United States. His "Softly and Tenderly Jesus is Calling" has had a world-wide publication.

Thompson, William Oxley, an American educator; born in Cambridge, O., Nov. 5, 1855; was president of Miami University in Oxford, O., in 1891–1899; and on July 13, 1899, was chosen president of the Ohio State University.

Thompson-Seton, Ernest, an American author and artist; born in South Shields, England, Aug. 14, 1860; lived in the backwoods of Canada in 1866–1870, and on the Western plains in 1882–1887; was educated at the Toronto Collegiate Institute and Royal Academy, London; became official naturalist to the government of Manitoba; studied art in Paris in 1890–1896; was one of the chief illustrators of the "Century Dictionary" and author and illustrator of "Wild Animals I Have Known," "The Biography of a Grizzly," "The Trail of the Sandhill Stag," "Wild Animal Play for Children," "Lives of the Hunted," etc., and became a popular lecturer on wild animal life. In December, 1901, his name was legally changed from Seton-Thompson to Thompson-Seton.

Thomson, Elihu, an American electrician; born in Manchester, England, March 29, 1853; came to the United States and subsequently secured more than 500 patents for inventions which included the Thomson method of electric welding. He was awarded the Grand Prix, in Paris, in 1889 for electrical inventions, received the decoration of Chevalier of the Legion of Honor, for electrical research, etc.

Thomson, William McClure, an American clergyman; born in Spring Dale, O., Dec. 31, 1806. In 1833 he went as missionary to Syria and Palestine, remaining till 1876. His chief work, "The Land and the Book," is an accepted authority on Palestine and Syria. He died in Denver, Col., April 8, 1894.

Thor, the son of Odin and Jord; in Northern mythology, the highest of the Æsir after Odin. He is the strongest of all the gods, and defends Asgard and Midgard against the Jotuns. His kingdom is called Thrudvangar; his palace, Bilskirnir, has 540 rooms, and is the largest in the world. He rides in a car drawn by two he-goats amid thunder and lightning.

Thoracic Regions, in anatomy, 14 regions into which the thorax in man is divided by imaginary straight

THORAX.

lines, longitudinal and transverse, so that the exact situation of any spot may be described.

Thorburn, Grant, pseudonym Lawrie Todd, an American author; born in Dalkeith, Scotland, Feb. 18, 1773; emigrated to America in 1794. His publications in book form include: "Forty Years' Residence in America"; "Men and Manners in Great Britain"; "Fifty Years' Reminiscences of New York." He died in New Haven, Conn., Jan. 21, 1863.

Thoreau, Henry David, an American author; born in Concord, Mass., July 12, 1817. In 1845 he built for himself a hut in a wood near Walden pond, Concord, Mass., and there for two years lived the life of a hermit. After quitting his solitude, Thoreau pursued his father's calling of pencil maker at Concord. Besides contributing to the "Dial" and other periodicals, he published "A Week on the Concord and Merrimac Rivers," and "Walden, or Life in the Woods." After his death appeared "Excursions in Field and Forest," "The Maine Woods," "Cape Cod," and "A Yankee in Canada." Thoreau was a friend of Emerson, and imbibed much of his spirit and method of thought. He died in Concord, May 6, 1862.

Thorn, a sharp conical projection constituting the growing point of a branch which has proved abortive. That this is its origin is shown by the fact that sometimes trees, which are thorny in their wild state, have their spines converted into branches when long cultivated in a garden, as is the case with the apple and the pear. A thorn differs from a prickle, which is so superficial that it comes away when the bark is peeled off, while in similar circumstances a thorn, being deep seated, remains. Sometimes thorns bear leaves, as in the whitethorn.

Thorn, Conference of, an effort to explain away the differences between Catholics and Protestants, with a view to reunion. The gathering was originated by Ladislaus IV. of Poland. It met in August, 1645, lapsed into disputation, and broke up in November.

COMMON THORN APPLE.

Thorn Apple, a genus of plants The common thorn apple is an annual plant, with smooth stem and leaves,

white flowers, and erect prickly capsules, a native of the East Indies, but now often met with in North America. It contains a peculiar alkaloid, daturine, which is, practically identical in its action with atropine. The leaves and seeds are employed in medicine. The dried leaves have a faintly narcotic smell, and an unpleasant bitter taste, the seeds, which are of a black color, are still more poisonous. A variety with pale violet flowers and purplish violet stem is frequently cultivated in gardens as an ornamental plant.

Thorne, Joseph, an American inventor; born in Marlboro, N. Y., Feb. 17, 1826; served through the Mexican War; became an engineer and was associated with Elias Howe while he was perfecting his sewing machine. Afterward he was connected with the Singer Company; established and operated a factory in Scotland; invented a typewriter, a sewing machine, a typesetting and distributing machine, etc. He died in Sing Sing, N. Y., May 4, 1897.

Thorntail, in ornithology, a popular name for the species of two genera of humming birds. The tail feathers in the first genus are much elongated and sharply pointed, and the tarsi are covered with a tuft of feathers. Discura, one of the species, has a racket at the end of the tail.

Thornton, Mathew, an American statesman; born in Ireland about 1714; came to America in 1717; took an active part in the overthrow of the royal government in New Hampshire; was president of the provincial convention of 1775 and speaker of the assembly in 1776; and served as judge of the Superior Court in 1776–1782. He was a signer of the Declaration of Independence; a member of the General Court of Massachusetts; and in 1785 was appointed a member of the General Council. He died in Newburyport, Mass., June 24, 1803.

Thorpe, Francis Newton, an American author; born in Swampscott, Mass., April 16, 1857. He was the author of "The Government of the People of the United States"; "The Story of the Constitution"; "The Constitution of the United States with Bibliography," etc.

Thorpe, Rose Hartwick, an American author; born in Mishawaka, Ind., July 18, 1850. She became widely known because of her poem "Curfew Must Not Ring Tonight." Her other publications include "Fred's Dark Days"; "The Chester Girls"; "Ringing Ballads," etc.

Thoth, or **Taut,** an Egyptian deity identified by the Greeks with Hermes (Mercury), to whom was attributed the invention of letters, arts, and sciences. The name is equivalent in significance to the Greek Logos, and Thoth is a mythical personification of the divine intelligence.

Thothmes III., an Egyptian king of the 18th dynasty; lived about 1600 B. C. and reigned for 54 years. He was famous for his conquests and carved upon the temple walls of Karnak the names of 625 vanquished cities and nations.

Thousand Islands, a group of small islands numbering about 1,800 in the St. Lawrence immediately below Lake Ontario. They belong partly to Canada and partly to the State of New York, and have become a popular summer resort.

Thrace, the ancient name of the Turkish province of Rumelia. It is said to have been peopled by a tribe of Pelasgians. The authentic history of the country commences with the formation of the Greek settlements in the 6th century, B. C. Of these, the principal were Byzantium (675 B. C.), Selymbria, Abdera (560 B. C.), Mesembria, etc.; but their want of union enabled the Thracian chiefs of the interior to preserve their independence. In 513 B. C., Darius, King of Persia, marched through Thrace on his way to punish the European Scythians, and on his return, left Megabazus, with 80,000 men, to subdue the country. In this he partially succeeded, but new disturbances and complications arose between the Persians and Greeks which resulted (480 B. C.) in the famous expedition of Xerxes. The rise of the Macedonian kingdom, under Philip II. (359 B. C.), destroyed the independence of a great part of Thrace. Under the government of Lysimachus, Thracia was incorporated with Macedonia, and became complete. On the fall of the Macedonian king-

dom (168 B. C.), it passed into the hands of the Romans, and subsequently shared the vicissitudes of the Roman empire. In 305, it was overrun by Alaric, and in 447, by Attila. In 1353, Amurath obtained possession of all its fortresses, except Constantinople, and it has ever since remained in the hands of the Turks.

Thrasybulus, an Athenian general, who in the time of the Thirty Tyrants, took refuge at Thebes. Having gained some followers, he marched against the usurpers and expelled them. In commemoration of this triumph, a yearly festival was instituted at Athens. Thrasybulus wisely procured the passing of a general amnesty, which decreed that no one but the principals should be punished for the atrocities which had been committed. He subsequently displayed great valor in Thrace, and slew the Lacedæmonian general with his own hand. Thrasybulus fell in a battle with the Aspendians, who were the allies of Sparta, 394 B. C.

Thread, a compound cord consisting of two or more single yarns, doubled and twisted. In the trade it is divided into lace, stocking, and sewing thread. Any fibrous substance, such as cotton or flax, when it is to be woven, is first spun into yarn, which is sometimes called thread. Sewing thread, however, always consists of at least two or more yarns twisted together. In the spinning of yarn the process is the same whether it is to be woven into cloth or twisted into thread. Beginning with the spun yarn the stages in the process of manufacturing a six-cord cotton thread (a very common kind) are: (1) The yarn is doubled and wound on bobbins; (2) the double yarn is then twisted into a two-ply thread; (3) the thread is next rewound on bobbins for the second twist; (4) the thread is twisted a second time on the twisting frame, three two-ply threads being thus formed into a six-cord thread; (5) the thread is rewound on large bobbins, from which it is reeled into hanks for bleaching or dyeing; (6) the bleached or dyed thread is next rewound on bobbins for spooling; (7) spooling — i. e., winding the thread on small bobbins called spools or pirns for use. The spindles of the spooling machine run at a speed of 7,000 revolutions per minute.

Cotton was first used in the manufacture of sewing thread at Pawtucket, R. I., by Samuel Salter in 1794. Flax had always been used everywhere, but as Mrs. Salter was spinning cotton, she noticed the fineness of the fiber, and at once conceived that it would make smooth thread. The idea was at once put into practice.

Threatening, menacing, especially with ulterior designs. By the common law of England to threaten bodily hurt is a civil injury against the person, and pecuniary damages can be recovered for interruption of a man's business through fear of such threats. Any person accusing or threatening to accuse any other person of infamous or other crimes, with the view to extort gain, is guilty of felony. Similar provisions are made against sending or delivering any letter threatening any house, ship, etc. or to wound or maim cattle; sending or delivering any threatening letter demanding any property or valuable. Any person who maliciously sends or delivers, knowing the contents, any letter threatening to kill or murder any person, or to burn or destroy any coal breaker, house, barn, or other building, or any rick or stack of grain or other agricultural produce, in most States is considered guilty of a misdemeanor, and on conviction is liable to fine and imprisonment.

Three Hours' Agony, or **Three Hours' Service,** a devotion practised on Good Friday, from noon till three o'clock, in commemoration of the Passion. It was introduced by Father Messia, S. J., of Lima, about 1730, and reached Rome in 1738. It was introduced into the English Church about 1865, and was rendered legal by the Act of Uniformity Amendment Act (1872).

Three Kings, the name given in Christian legend to the Magi, who came from the East to adore the Infant Jesus (Matt. ii: 1–12). They were probably called kings from Psalm lxxii: 10, which verse is used as an antiphon in the office for Epiphany. According to tradition, their names were Gaspar, Melchoir, and Balthaz-

ar, and on their return to the East they received baptism.

Thrift, in botany, a genus of plants, called also seapink; leaves densely fascicled, linear, with impressed points both above and below; inflorescence a scape, bearing a head of rose-colored, pink, or white flowers, surrounded by a brown, membranous, three-leaved involucre, and intermixed with scales. It is found on seacoasts and on mountains, and is well adapted for edging in gardens.

Throat, the anterior part of the neck of an animal, in which are the œsophagus and windpipe, or the passages for the food and breath.

Throne, the chair used on occasions of state by a king, emperor, or Pope. It is usually raised, and often surmounted with a canopy. The term is also applied to the seat of a bishop in his cathedral church, and is a common metaphor to express sovereign power.

Throop Polytechnic Institute, a co-educational, non-sectarian institution in Pasadena, Cal.; founded in 1891.

SONG THRUSH.

Thrush, in ornithology, the name for any of the Turdidæ. They are universally distributed, and are very highly organized birds, and it is for this reason, perhaps, as well as on account of their omnivorous diet, that they have been able to establish themselves on a number of remote islands. They differ widely in their habits and in their habitats; some are gregarious, others live solitarily or in pairs. The wood thrush is abundant in North America in summer, as far N. as Hudson Bay, retiring to tropical and subtropical regions in winter. It is rather smaller than the song thrush, and very similar to it. Several other species are found in North America.

Thrush, in veterinary surgery, an affection of the horse's frog, appearing as a severe and acute inflammation, which usually proceeds to ulceration, and which is accompanied by a fetid discharge. It is most frequently seen in horses of unsound constitution, and especially appears in stables where the drainage is deficient, and uncleanliness prevails.

Thucydides, historian of the Peloponnesian war; born in the deme Halimus most probably in 471 B. C.; was the son of Olorus and Hegesipyle, and was related to Miltiades and Cimon. It is probable that his literary model was Antiphon, and that he was influenced in his views on philosophy by Anaxagoras. Certain it is that, Athenian as he was, of good family, and resident in the most cultivated community in Greece, he must have known Sophocles, Euripides, Aristophanes, Phidias, Protagoras, Gorgias, and possibly Herodotus and Æschylus. He was further possessed, either by inheritance or by acquisition through marriage, of gold mines in that part of Thrace lying opposite the island of Thasos. We know from himself that he was one of the sufferers from the terrible plague of Athens, and also one of the few who recovered. He held military command, and he had under him an Athenian squadron of seven ships at Thasos, 424 B. C., when he failed to relieve Amphipolis, which fell into the hands of Brasidas. Condemned to death as a traitor, he took refuge in exile and retired to his Thracian estates. His exile enabled him as he tells us, to associate with the Peloponnesians quite as much as with the Athenians; and he probably spent some time also in Sicily, as we may infer from his minute descriptions of Syracuse and its neighborhood. According to his own account, he lived in exile 20 years, and probably returned to Athens after the destruction

of its walls, in 404. How or when he died is unknown; but he did not live long enough to revise book viii. or to bring his history down to the end of the war.

If Herodotus was "the father of history," Thucydides was the first of critical historians. There is hardly a literary production of which posterity has entertained a more uniformly favorable estimate than the history of Thucydides. This high distinction he owes to his undeviating fidelity and impartiality as a narrator; to the masterly concentration of his work, in which he is content to give in a few simple yet vivid expressions the facts which it must have often taken him weeks or even months to collect, sift, and decide upon; to the sagacity of his political and moral observations, in which he shows the keenest insight into the springs of human action and the mental nature of man; and to the unrivaled descriptive power exemplified in his account of the plague of Athens, and of the Athenian expedition to Sicily.

Thug, or **Thag,** the name given in the N. provinces of India to a member of a fraternity, who looked on murder as the sole means of staying the wrath of the goddess Kali, and derived their principal means of support from the plunder of their victims. In old times, according to Hindu mythology, Kali made war on a race of giants, from every drop of whose blood sprang a demon. These demons multiplied, and at last the goddess created two men to whom she gave handkerchiefs, with which they strangled the infernal beings. There is ground for believing that the murderous sect of thugs is not yet extinct in India. The term "thug" is frequently applied in America to persons of brutal and criminal habits.

Thulstrup, Thure de, an American artist; born in Sweden, in 1848; was first lieutenant and captain in the Franco-Prussian War; took part in the campaigns of the Loire and the East; participated in both battles of Orleans; and engaged in the street fights with the Communists in Paris. He came to the United States in 1872; began his artistic career on the New York "Graphic" in 1873; was connected with the Frank Leslie publishing house in 1876–1880, and in the latter year went to the Harpers He became widely known as a book and magazine illustrator, especially on military and historical subjects.

Thumb-screw, a former instrument of torture for compressing the thumbs. It was employed in various countries, Scotland in particular called also thumbikins or thumbkins

Thunder, the violent report which follows a flash of lightning. It commences the same moment as the flash but, as the sound travels only at the rate of about 1,100 feet a second while light does so at the rate of 190,000 miles, the flash of the lightning is the first to be perceived, and thus a means is afforded of calculating the distance of the lightning. The noise of the thunder arises from the disturbance produced in the air by the electric discharge, but why the sound should be so prolonged has been differently explained. The old hypothesis was that the sound was echoed from every precipice, from every building, and from every cloud in the sky. Another is that the lightning itself is a series of discharges, each producing a particular sound according to the distance at which it commences, and the varying densities of the portions of air which it traverses before reaching the ear. A third conjecture is that the noise arises from the zigzag movement of the electric fluid, the air at each salient angle being at its maximum compression.

Thunder Bird, an imaginary bird occurring in the mythology of races of low culture, and personifying thunder or its cause. Among the Caribs, Brazilians, Harvey Islanders, and Karens, Bechuanas, and Basutos, there are legends of a flapping or flashing thunder bird, which seem to translate into myth the thought of thunder and lightning descending from the upper regions of the air, the home of the eagle and the vulture.

Thundering Legion, a Roman legion containing some Christians, which (A. D. 174) fought under Marcus Antoninus against the Marcomanni. The Roman army was shut up in a defile and ready to perish with thirst. when a thunderstorm with heavy rain

relieved them of their distress, and so terrified the enemy that a complete victory was gained. The Christians attributed the deliverance to the prayer which they had just before presented, and considered it miraculous. The heathen also considered the interposition supernatural, but ascribed it to Jupiter, Mercury, or to the power of magic. Also a legion composed of Christian soldiers raised in the Thebais, and led by St. Maurice. The name existed long before it was applied to either of these two legions.

Thurman, Allen Granbery, an American jurist; born in Lynchburg, Va., Nov. 13, 1813; elected to Congress in 1844; chosen judge of the Supreme Court of Ohio in 1851; and was elected United States Senator in 1869 and 1874, where he became leader of the Democratic side. While in Congress he drafted and secured the adoption of the "Thurman Act"; supported the "Bland-Allison Act"; took part in framing the bill providing for the Electoral Commission; and was a member of the commission and a warm defender of its constitutional authority. He served also on the International Monetary Commission in Paris in 1881; was an unsuccessful candidate for the nomination for the vice-presidency in 1876, 1880, and 1884; and in 1888 when again presented for that office was nominated by acclamation, but not elected. He was popularly known as "The Old Roman." He died in Columbus, O., Dec. 12, 1895.

Thursby, Emma, an American concert singer; born in Brooklyn, N. Y., Nov. 17, 1857; studied under Lamperti in Milan, and under Madame Rudersdorff; made a tour of the United States and Canada in 1875 and in England and France in 1878–1879, and was engaged as prima donna in the company of Maurice Strakosch in 1880–1881.

Thursday, the fifth day of the week. The word was originally Thor's day, i. e., the day of Thor, the god of thunder. The Romans similarly called the day dies Jovis = the day of Jove or Jup'ter, the god corresponding to the Scandinavian Thor.

Thurston, John Mellen, an American lawyer; born in Montpelier, Vt., Aug. 21, 1847; was United States Senator from Nebraska in 1895–1901, and in 1897 rose to special prominence because of his speeches in the Senate advocating prompt intervention on behalf of Cuba.

Thurston, Robert Henry, an American educator; born in Providence, R. I., Oct. 25, 1839; Assistant Professor of Natural Philosophy at the United States Naval Academy in 1865–1871; Professor of Mechanical Engineering at Stevens Institute of Technology in 1875–1885; and in 1885 was made director of Sibley College at Cornell University. He was also president of the American Society of Mechanical Engineers; United States Commissioner to the Vienna Exposition in 1873; and the inventor of several testing machines, engine governors and other devices. His publications include "Friction and Lubrication," "Materials of Engineering," "History of the Steam Engine," "Manual of the Steam Boiler," about 300 professional and scientific papers, etc.

Thwaites, Reuben Gold, an American historian; born in Dorchester, Mass., May 15, 1853. He took the post-graduate studies at Yale University in 1874–1875; was managing editor of the "Wisconsin State Journal," Madison, in 1876–1886. In the latter year he became secretary of the State Historical Society of Wisconsin. His publications include "The Story of Wisconsin"; "The Colonies 1492–1750"; etc.

Thwing, Charles Burton, an American educator; born in Theresa, N. Y., March 4, 1860; was graduated at the Northwestern University in 1888; studied at the University of Bonn in 1893–1894. In 1896, he became Professor of Physics at Knox College. His publications include "An Elementary Physics"; "Color Photography by Lippman's Process"; etc.

Thwing, Charles Franklin, an American educator; born in New Sharon, Me., Nov. 9, 1853; was graduated at Harvard University in 1876, and at Andover Theological Seminary in 1879; pastor of Congregational churches in 1879–1890. In the latter year he accepted the presidency of

the Western Reserve University and Adelbert College. He is the author of "American Colleges: Their Students and Work"; "God in His World"; etc.

Tiara, the head covering of the ancient Persians; the crown of the ancient Persian kings. These alone had the privilege of wearing the tiara erect; the nobility and priests wore it depressed, or turned down on the fore side. Its form is described variously by different authors, so that it must have varied at different periods. According to Xenophon it was encompassed with the diadem, at least on ceremonial occasions. Also the triple crown worn by the Pope on certain occasions as a sign of his temporal power, of which it is a badge, as the keys are of his spiritual jurisdiction. In its present form the tiara consists of a high cap of cloth of gold, encircled by three coronets, and surmounted by a mound and cross of gold; on each side is a pendant, embroidered and fringed at the end, and powdered with crosses of gold. The tiara is placed on the Pope's head at his coronation by the second cardinal deacon in the loggia of St. Peter's, with the words: "Receive the tiara adorned with three crowns, and know that thou art Father of princes and kings, Ruler of the World, and Vicar of our Saviour Jesus Christ." Also a crown, a diadem.

Tibballs, William Huntington, an American educator; born in Union, N. J., Dec. 22, 1848; was graduated at Oberlin College in 1875; Professor of Philosophy and Literature in Parks College for six years; held the same chair at Salt Lake College for three years; and was president of the Utah State Christian Endeavor Union in 1897–1898. He conducted extensive mining operations, and contributed to literary and educational magazines.

Tiber, the chief river of Central Italy, and the most famous in the peninsula. It rises in a dell of the Tuscan Apennines. Its course till it reaches Perugia is S. S. E.; thence, as far as Rome, it pursues, along an irregular zigzag line, a S. direction; but when it enters the plain of the Campagna it curves S. S. W., and enters the Mediterranean by two branches, which enclose the Isola Sacra, or Sacred Isle. Of these the N., the Fiumicino, alone is navigable; the Fiumara is silted up with sand. The entire course of the river is about 260 miles — only 145 direct from source to sea. It is navigable for boats of 50 tons to the confluence of the Nera, 100 miles from its mouth, and small steamers ascend to within 7 miles of that point. The Tiber is supplied mainly by turbid mountain torrents, whence its liability to sudden overflowing of its banks; even the oldest Roman myth that of Romulus, being inseparably associated with an inundation. Its waters, too, are still discolored with yellow mud, as when Virgil described it.

Tiberius, Claudius Nero Cæsar, a Roman emperor; born Nov. 16, 42 B. C.; was the son of Tiberius Claudius Nero and Livia Drusilla, who became the wife of Octavianus Cæsar in 38 B. C. Tiberius and his brother Drusus were brought up in the household of their stepfather, who from the year 27 B. C. was the Emperor Augustus. Tiberius was adopted by Augustus as his successor in A. D. 4. In the same year he led an army into Germany, marched to the Elbe, and defeated the Sigambri, Bructeri, and Cherusci. The suppression of a revolt in Pannonia and Dalmatia procured for him the honor of a third triumph. He was now sent once more against the Germans. Accompanied by the young Germanicus, he crossed the Rhine, and during the years A. D. 11 and 12 traversed the countries E. of that river. On the death of Augustus, in 14, Tiberius became emperor. He was in his 55th year, and, though beloved by none, he was much respected for the dignity of his demeanor and the reputed severity of his virtue. For some years he affected to take no active part in public affairs, while he gradually destroyed the last remnants of the ancient republic, abolishing the "comitia," and transferring the election of public officers to the subservient senate.

After the death of Germanicus in 19, not without suspicion of poisoning Tiberius retired to the island of Capreæ to enjoy seclusion, leaving to Ælius Sejanus, commander of the Prætorian guards, the direction o

ublic affairs. Blinded by the misepresentations of Sejanus, he agreed o every measure which the latter felt o be conducive to his own ambition, nd a long and uniform series of cruelies followed. Awakened at last to he ambitious schemes of his favorite, Tiberius ordered the senate to conemn Sejanus, and the latter, with his amily and friends, was put to death n 31. Some time after this Tiberius ook up his residence at Misenum, vhere, as at Capreæ, he plunged himelf into the most disgusting debauchry. On March 16, A. D. 37, he fell nto a lethargy, and being believed to e dead, Caligula was proclaimed emeror. Tiberius, however, recovered, ut he was suffocated in his bed by Macro, to save himself and the young emperor.

Tiberius Constantine, called also Tiberius II., one of the most virtuous emperors of Constantinople, was a naive of Thrace, and was brought up at he court of Justinian. He succeeded o the throne in 578, and having suppressed the conspiracy of Sophia, vidow of his predecessor, reigned unhallenged till his death, in 582.

Tibet, a dependency of the Chinese Empire, in Central Asia, between China and India; area about 651,000 square miles; pop. about 6,000,000. Tibet is enclosed by the Kuenlun and he Himalaya Mountains. These chains un E. from a mountain knot at the S. extremity of the Pamir highland, nd continue to diverge from each ther till they reach the meridian of Lassa, when they draw slightly nearer o the E. and S. E., where Tibet is ounded by ranges which separate it rom China and Indo-China.

Tibet is the loftiest region of such xtent on the globe. Its table-lands ary in height from 17,000 to 10,000 eet. It has been estimated that their verage height is that of the sumit of Mont Blanc. The table-lands re loftiest in the W. and N., whence hey slope gradually to the S. and E. Convalot certified to the existence of olcanoes. The mountain girdle which urrounds Tibet has made it an obtacle across which conquerors from Mongolia could not enter India without making a long detour. Another onsequence of these barriers has been that Tibet has remained to the present day the region of the globe least known to geographers.

Tibet lies in the latitudes of Delhi, Cairo, Algiers, and Naples, but its inland position and elevation give it a cold, dry, and extreme climate. On the table-lands at an elevation of 14,000 feet the thermometer in May sinks to 7° F. below zero, and over the whole country an arctic winter prevails for five or six months. There is a very short but excessively hot summer, more especially in the valleys of the Indus and Sanpo, where the high temperature is more oppressive to Europeans than that of the Indian plains. The N. and W. table-lands are without trees. They abound in steppes in which pasture herds of wild animals — yaks, horses, asses, goats, antelopes, etc. The pastures of the S. table-lands supply food to the flocks and herds of a large nomad population. Agriculture is confined chiefly to the valleys of the Indus and Sanpo, the grain chiefly grown being barley; the kitchen herbs and fruits of Europe are also cultivated. Irrigation and terrace cultivation are necessary to secure even scanty crops.

The mineral products of Tibet are of high value, and include gold, silver, iron, copper, zinc, mercury, cobalt, borax, salt, sulphur, etc., but few mines are yet developed.

The Tibetans are good blacksmiths and cutlers; their chief industrial occupation, however, is the preparation of woolen cloth. They are active traders, and large caravans, in which yaks and sheep are the beasts of burden, are constantly traversing the country on their way to the great fairs in Tibet, and the entrepots of the surrounding countries. At one time there was a busy commerce with India, but since Tibet became a Chinese dependency the passes have been closed. In 1894, Yatung on the frontier of India was opened by treaty as a trade mart and the Chinese and Indian governments each stationed an official at that post.

The Tibetans are a Mongolic race, much more closely allied to the Burmese than to the Chinese or Mongols proper. They are broad-shouldered and muscular, and have Mongol features, but not in an exaggerated form.

They are said to be intelligent, but without initiative. The Tibetans by race people nearly the whole of Tibet. A few nomads, Mongols and Turkish tribes, have penetrated into the N. steppes, and Chinese in large numbers have colonized the S. E. In Tibet polyandry is practised, the husbands of one wife being generally brothers. This form of marriage is almost universal among the poor. The rich are polygamists. Both systems check population. In Little Tibet, where monogamy has penetrated from the W. population increases rapidly.

There exist in Tibet two religions: (1) the Bon or Bon-Pa creed, which is a development of Mongol Shamanism, and is the native religion; and (2) Lamaism, a form of the Buddhism introduced from India.

Since 1720 Tibet has been a dependency of China, which, however, interferes only with foreign and military affairs. There are two imperial Chinese residents or Ambans at the town of Lassa.

Tibet Dog, or **Tibet Mastiff,** a variety about the size of a Newfoundland dog, but with a head resembling that of the mastiff, and having the flews large and pendent. The color is usually deep black, with a bright brown spot over each eye; the hair is long, and the tail bushy and well curled. This variety is extremely savage, and has been known from classic times, when it was employed by the Romans, especially under the emperors, in the games of the circus.

Tibia, the shin bone, with the exception of the femur, the longest bone in the skeleton. It is the anterior and inner of the two bones of the leg, and alone communicates the weight of the trunk to the foot. It is slightly twisted, and articulates with the femur, fibula, and astragalus. The tibia corresponds with the radius of the arm. In entomology, the fourth joint of the leg. In music, a kind of pipe, a common musical instrument among the Greeks and Romans. It had holes at proper intervals, and was furnished with a mouthpiece, the performer in blowing putting the end of it to his mouth. Two such pipes were often blown simultaneously by the same performer.

Tibing. See Gibing.

Tibullus, Albius, a Roman elegiac poet; born presumably in Gabii, about 54 B. C. While still a youth he acquired the friendship of the orator, poet, and statesman, M. Valerius Messala, head of a literary coterie only less attractive than that of Mæcenas. As literature was a direct passport to office under government, the already marked poetic gifts of Tibullus procured him a place on the staff of Messala commissioned by Augustus, 30 B. C., to crush a revolt in Aquitania. In this campaign the poet displayed capacity enough to win him distinction and decorations, but these could not countervail his repugnance to a soldier's life. Accordingly the close of the war found him dividing his time between the society of Rome and the retirement of Pedum at the base of the Tusculan and Sabine hills.

Tibullus died in 19 B. C., immediately after Virgil, universally deplored in Rome, and years afterward the subject of a magnificent elegy by Ovid.

Tic Douloureux, a painful affection of a facial nerve, a species of neuralgia. It is characterized by acute pain, attended with convulsive twitchings of the muscles, and continuing from a few minutes to several hours. It occurs on one side of the face, and may be caused by a diseased tooth, by inflammation in the ear passage, by exposure to cold, by dyspepsia, etc.

Tick, a popular name for any individual of the family Ixodidæ. They abound in almost all parts of the world, but chiefly in warm countries. Many of them live in woods, on the branches of trees, but ready to attach themselves to animals, which sometimes suffer greatly from their attacks. The quantity of blood drawn from their hosts by these little pests is by no means inconsiderable, for their skin is so distensible that the gorged parasite increases to many times its original bulk. Though generally confined to some particular species or group of animals, ticks occasionally attack man.

Ticknor, Caroline, an American author; born in Boston, Mass. She wrote stories and articles published in

various magazines; was author of "A Hypocritical Romance and Other Stories," "Miss Belladonna, a Child of Today," and was one of the editors of "The International Library of Famous Literature," "Masterpieces of the World's Literature," and "The World's Great Orations."

Ticknor, George, an American historian; born in Boston, Mass., Aug. 1, 1791. He was graduated at Dartmouth College in 1807. In 1820 he was appointed Professor of Modern Languages and Literature in Harvard University. In 1835 he resigned his professorship, and for the next three years traveled in Europe with his family. In 1849 he published a "History of Spanish Literature," corrected and enlarged editions being subsequently published. It was at once recognized by scholars as a work of value, and has been translated into Spanish and German. After some works of minor interest he produced in 1863 "The Life of William Hickling Prescott," the historian, with whom he had maintained a close friendship. He died in Boston, Jan. 26, 1871.

Ticonderoga, a village in Essex co., N. Y.; on Lake Champlain. Ticonderoga figured prominently during the Colonial and Revolutionary periods. In 1755 the French erected a fort here and named it Carrillon. Two years later Montcalm started from this place with 9,000 men and captured Fort William Henry on Lake George. In 1758 General Abercrombie endeavored to take the French fort, and was repulsed after losing 2,000 men; but in 1759 it fell into the hands of General Amherst together with Crown Point. Both were then enlarged and strengthened at a heavy expense. In 1775 the works were taken by Ethan Allen while weakly garrisoned. Two years later the fort surrendered to General Burgoyne, and after being dismantled was abandoned.

Ticunas Poison, a poison used for smearing arrows by the Ticunas and other Indian tribes living near the Amazon. When given to animals it produces strong convulsions lasting for hours. It probably contains picrotoxin, like other poisons used for the same purpose, but it has not been accurately investigated.

Tidal Motor, a motive power receiving its energy from the action of tidal waters.

Tide, a regular periodic oscillation to which the surface of the sea at any place is subject. The oscillation takes place about twice a day, the periodic time being, on an average, about 12 hours and 26 minutes. Consequently if high tide occurs at noon one day, it will occur next day some 50 minutes later. This is precisely the interval of time which elapses between two successive meridian passages of the moon; and that there must be some connection between the tides and our satellite was early recognized by astronomers. The explanation, however, was lacking till Newton proved them to be a necessary consequence of the law of gravitation. The phenomenon of the tide is, indeed, a case of perturbations, of exactly the same nature as the irregularities which the action of the sun produces on the motions of the moon. If we compare the attraction of the moon on a particle of the earth's surface with the attraction exerted on the earth as a whole, we readily see that, according as the particle is on the nearer or further side of the earth, the former attraction is greater or less than the latter; and it is to this difference of attraction, to which the waters yield, that the whole phenomenon of tide is due. The nearer waters are driven toward the moon, the further waters away from it. If the earth were spherical and uniformly covered with water, the tendency would be to make the water arrange itself in the form of a spheroid with the longer axis pointing toward the moon; and did the earth always present the same face to the moon, this would be rigorously the case.

Such is the equilibrium theory of tides, as originally given by Newton.

More recently Young and Airy have approached the question as one of wave motion, basing their theory on the motion of waves in canals. Till now we have been regarding the moon as the sole tide-producing agent, but it is evident that the sun must have a similar action, though not so marked because of its much greater distance. It was proved by Newton that the disturbing forces exerted by two bodies

on the same particle are directly as their masses, and inversely as the cubes of their distances; hence the ratio of the disturbing force exerted by the sun to that exerted by the moon 7:16. The principal tidal wave is that caused by the moon, but on it must be superposed that due to the sun. When the sun and moon are in syzygy, at times of new and full moon, their tidal waves will be superposed crest on crest, and the effect will be what is called a spring tide. When they are in quadrature, trough will coincide with crest, the lunar tide will be partially neutralized by the solar tide, and the result will be the so-called neap tide. The average spring tide will be to the average neap tide as $16 + 7 : 16 - 7 = 23 : 9$.

The attempt to establish a complete theory from abstract principles has proved a failure; and the only true method by which to get an insight into the particular laws which govern tidal action at any given place is continued observation. By means of Lord Kelvin's tide gauge a graphical representation of the tidal oscillation at any place can be easily obtained; and by harmonic analysis of the curve, the constituent factors may be easily discovered, and the comparative effects of their several causes estimated. One efficient cause in retarding tides has not been mentioned, namely, fluid friction, which, as first noticed by Kant, must act as a continual brake to the earth in its rotation; and this gradual slackening in the earth's speed of rotation must go on till the day is of the same length as the lunar month, when matters will be as required in the equilibrium theory given above.

Tiedeman, Christopher Gustavus, an American writer on law; born in Charleston, S. C., July 16, 1857; was graduated at the College of Charleston in 1876; and at the Columbia Law School in 1879; was Professor of Law in the University of Missouri for 10 years and held the same chair in New York University for six years. He was author of "The Law of Real Property," "Limitations of Police Powers," etc. Died 1903.

Tientsin, a large city and river port of China, in the province of Chihli, on the right bank of the Peiho; 34 miles from the mouth of the river. It is the port of the city of Peking, from which it is distant 80 miles S. E. The river is generally frozen over from about Dec. 15 to March 15, and the business at other times carried on by means of boats and junks is taken up by sledges, which swarm on the river. By the treaty of Tientsin, signed here in 1858, the port was declared open; and a British consulate was established in January, 1861, while part of the allied troops were still here. In 1881 Tientsin was connected by telegraph with Shanghai (the line extending to Peking); and there is a railway from Tientsin to the mouth of the Peiho, which will ultimately be extended to Shanghai. The imports have an annual value of $2,000,000 or $2,500,000, the exports about $5,000,000. There is also a large and rapidly increasing transit trade with Russia via Siberia. Pop. estimated at 1,000,000. There was severe fighting at this place at the time of the Boxer troubles in 1900 in which the American troops greatly distinguished themselves.

Tierra del Fuego, an archipelago consisting of a group of several large and numerous small islands, lying off the S. extremity of South America; in lat. 54° S., lon. 70° W.; separated from the continent by the Strait of Magellan. Its extreme S. point is formed by Cape Horn. The principal island, Tierra del Fuego, sometimes known as King Charles South Land, is divided between Chile and Argentine Republic, to the latter of which Staten Island also belongs. All the other islands and islets are included in Chile.

The whole group is mountainous, the high hills of the mainland (Tierra del Fuego) attaining a height of 7,000 feet, the snow line being at an altitude of 4,000 feet above sea-level. There are some dreary plains and a few fertile river valleys, with areas of marshy ground between Useless and St. Sebastian Bays. Toward the N. the plains produce good pasturage, and attempts at sheep farming have been made in the district, the Jesuit missionaries on Dawson Island having a farm with nearly 20,000 sheep and over 6,000 cattle. Forests of beech,

winter's bark, magnolia and cypress cover large areas.

The land of Tierra del Fuego is rapidly rising, and the coast line has advanced 3 kilometers since the date of the surveys of Captains King (1826–1828) and Fitzroy (1831–1836). The rocks are principally volcanic, but sedimentary strata are not uncommon on the principal island, and probably on some others. Granite, syenite, porphyry, quartz, serpentine, trachite, diorite, and sandstone comprise the principal rocks. Some coal, of a poor description, and a little gold have been found. The situation of the islands exposes them to a series of conditions which render their climate the most tempestuous in the world. The prevailing winds are from the W., beginning to blow with the rise of the sun, and increasing in violence till dusk, when a calm may generally be looked for with confidence. During the short summer the winds blow from the N. Settled weather never lasts for more than a fortnight at a time. December, January and February are the warmest months. March is exceedingly boisterous always, and during its course occur the most destructive gales.

The people are savages of a low type, divided into three tribes, the Onas (or Aonas), the Yaghans, and the Alakalufs, the Yaghans being now supposed to be the aborigines. The Onas are tall, the others short and stunted in stature. The charge of cannibalism once brought against them appears to be unfounded. They number about 8,000.

Tiffany, Charles Comfort, an American clergyman; born in Baltimore in 1829; was educated at Dickinson College, Andover Theological Seminary, and the Universities of Halle, Heidelberg and Berlin; ordained in the Protestant Episcopal Church in 1866; held charges in Boston and New York in 1867–1890; and became archdeacon of New York in 1893.

Tiffany, Charles Lewis, an American manufacturer; born in Killingly, Conn., Feb. 15, 1812; removed to New York city in 1837, where with J. B. Young he opened a stationery and fancy goods store, from which the house of Tiffany & Co. grew, with branch houses in London and Paris. Mr. Tiffany was one of the founders of the Union League Club and of the New York Society of Fine Arts, and a member of numerous societies. He died in New York city, Feb. 18, 1902.

Tiffany, Francis, an American clergyman; born in Maryland in 1827; was ordained in the Unitarian Church in 1852; and was pastor in West Newton, Mass., in 1865–1882.

Tiffany, Louis Comfort, an American artist; born in New York city, Feb. 18, 1848; studied art in New York and Paris; has done considerable decorative work; discovered the "Tiffany Favrile Glass," and some of his designs for stained glass windows have become famous. He was president and art director of the Tiffany Glass and Decorating Company, and a member of many American and foreign art associations.

Tiffany, Louis McLane, an American surgeon; born in Baltimore, Md., Oct. 10, 1844; was graduated at the University of Cambridge, England, in 1866, and at the Medical Department of the University of Maryland, 1868, and afterward practised in Maryland. He was at different times demonstrator of anatomy, Professor of Operative Surgery and Professor of Surgery at the University of Maryland.

Tiflis, the capital of a province of the same name in Asiatic Russia, and chief city in the territory of the Caucasus, lies in a narrow valley on both sides of the Kur, 184 miles E. S. E. of Poti by rail. In its architecture and in the manners of its inhabitants the city presents a singular mixture of Asiatic and European features. The city is the seat of the civil and military authorities of Transcaucasia, and has 42 churches (23 Armenian), 2 mosques, a gymnasium, and several upper schools, a library, a botanic garden, a hospital, and a theater. It has active manufactures of woolens, silks, cottons, armor, and leather, and is the emporium for the important Russian trade with Persia. It is already connected with Teheran by telegraph. Pop. 160,645.

Tiger, in zoölogy, the largest and most dangerous of the Felidæ, exceeding the lion slightly in size and far

surpassing him in destructiveness. It is purely Asiatic in its habitat, but is not by any means confined to the hot plains of India, though there it reaches its highest development both of size and coloration. According to Fayrer, the full-grown male Indian tiger is from 9 to 12 and the tigress from 8 to 10 feet from the nose to the tip of the tail, and from 36 to 42 inches high at the shoulder. The ground color of the skin is rufous or tawny yellow, shaded with white on the ventral surface. This is varied with vertical black stripes or elongated ovals and brindlings. On the face and posterior surface of the ears the white markings are peculiarly well developed. The depth of the ground color and the intensity of the black markings vary, according to the age and condition of the animal. In old tigers the ground becomes more tawny, of a lighter shade, and the black markings better defined. The ground coloring is more dusky in young animals.

Though possessed of immense strength and ferocity, the tiger rarely attacks armed men, unless provoked, though often carrying off women and children. When pressed by hunger or enfeebled by age and incapable of dealing with larger prey, like buffaloes, the tiger prowls around villages, and, having once tasted human flesh, becomes a confirmed man eater. In a government report it is stated that "one tigress caused the desertion of 13 villages, and 250 square miles of country were thrown out of cultivation." The jaguar is sometimes called the American tiger.

Tiger Cat, a name of not very definite signification, sometimes given to some of those animals of the family Felidæ which are of middling size, and resemble the tiger in their form or markings, such as the chati, the margay, the ocelot, the serval, etc.

Tiger Flower, a Mexican bulbous plant frequently cultivated in gardens on account of the magnificence of its flowers. The stem is about one foot in height, with sword-shaped leaves. The flowers are large, of a singular form, and very evanescent.

Tiger Lily, a native of China, common in American gardens, having scarlet flowers turned downward, the perianth being reflexed. It is remarkable for having axillary buds on the stem. The bulbs are eaten in China and Japan.

Tiger Shark, a shark common in the Indian Ocean. Young specimens are generally met with close to the shore; but the full-grown fish, from 10 to 15 feet long, frequent the open sea. The color is a yellowish-brown, with black or dark-brown transverse bands or spots, whence the popular name. Called also zebra shark.

Tigert, John James, an American clergyman and author; born in Louisville, Ky., Nov. 25, 1856; was graduated at Vanderbilt University in 1877; Professor of Moral Philosophy there in 1881–1890; became book editor of the Methodist Episcopal Church, South, and editor of the "Methodist Review" in 1894. He was author of "Handbook of Logic," "Systematic Theology," etc.

Tigris, next to the Euphrates, the greatest river of Asiatic Turkey; rises on the S. slope of the Armenian Taurus range in Kurdistan to the S. of Lake Goljik. It has a sinuous course in a S. E. direction, almost parallel to that of the Euphrates, which river it joins at Kurna, after a course of 1,060 miles. Like the Euphrates, the Tigris rises in spring with the melting of the snow on the Armenian Mountains; and during the latter half of May, when the flood is at its height, the whole country between and beyond these rivers, for over 100 miles between Bagdad and Bussorah, is converted into a lake. The arrowy stream either loses less water by irrigation or receives more from its affluents than the Euphrates, for it is the larger of the two at the point of confluence.

Tilden, Douglas, an American sculptor; born in Chico, Butte co., Cal., May 1, 1860; lost his hearing as a result of scarlet fever and in consequence was educated at the State Institution for the Deaf in Berkeley, Cal., where he was graduated in 1879. Later he took up the study of sculpture and in 1893 was appointed a member of the jury on sculpture at the World's Columbian Exposition in Chicago. He was a member of the Na-

tional Sculpture Society, the New York Art Club, the San Francisco Art Association, etc., and Professor of Sculpture at the Mark Hopkins Art Institute. His works include "Baseball Player," "Tired Boxer," etc.

Tilden, Samuel Jones, an American statesman; born in New Lebanon, N. Y., Feb. 9, 1814; was educated at the University of New York; studied law with Benjamin F. Butler, and was admitted to the bar in 1841; began practice in New York city. During the Civil War he maintained that the struggle with the South could be terminated without resorting to acts not warranted by the Federal Constitution. Mr. Tilden became leader of the Democratic party in New York State in 1868, and in that capacity strenuously opposed the corrupt administration of the Tweed faction. In 1874 he was elected governor of New York, and during his term of office broke up the notorious "canal ring." In 1876 he was nominated for the presidency by the National Democratic Convention. In the election Hayes received 4,033,295 popular votes, and Tilden, 4,284,265. In 1877, on the finding of the Electoral Commission, the presidency was awarded to the Republican candidate by an electoral vote of 185 to 184. Mr. Tilden died in "Greystone," his country-seat, near Yonkers, N. Y., Aug. 4, 1886. The bulk of his fortune, which consisted of several million dollars, was bequeathed to trustees to be used for establishing a great public library in New York city, but his will was contested successfully. An heir relinquished her share of the estate and this was the nucleus of the Tilden Foundation of the New York Public Library.

Tile, a kind of thin slab of baked clay, used for covering roofs, paving floors, lining furnaces or ovens, constructing drains, etc. Tiles are manufactured by a similar process to bricks.

Tileston, Mary Wilder, an American author; born in Salem, Mass., Aug. 20, 1843. She was author of "Quiet Hours," "Prayers Ancient and Modern," etc.

Tilestone, in geology, the uppermost group of the Silurian period, consisting of a reddish, thin-bedded, slightly micaceous sandstone, which in some places attains a thickness of 1,000 feet.

Tillman, Benjamin Ryan, an American legislator; born in Edgefield co., S. C., Aug. 11, 1847; was educated at Bethany Academy. He was elected Democratic governor of South Carolina in 1890 and 1892; was conspicuous in the Constitutional Convention of South Carolina in 1895; and was elected United States Senator in 1895 and 1901. On Feb. 22, 1902, during the consideration of the Philippine Tariff Bill, Senator Tillman and his associate, Senator McLaurin, indulged in a personal encounter, for which the president of the Senate directed that the calling of their names should be omitted, a ruling which he subsequently withdrew in order that the Senate itself might pass on the breach of courtesy. On Feb. 28, both Senators were censured by the Senate for their action. Because of the occurrence in the Senate President Roosevelt withdrew from Senator Tillman an official invitation to meet Prince Henry of Prussia, which act became a source of much severe criticism of the President in certain parts of the South. It was thought that because of these two occurrences the President would decline to visit the Charleston Exposition, but the original invitation of the exposition managers was supplemented by a cordial communication from leading citizens of the city and State urging the President's attendance.

Tillman, Samuel Escue, an American military officer; born near Shelbyville, Tenn., Oct. 2, 1847; was graduated at the United States Military Academy and commissioned 2d lieutenant of artillery in 1869; was assistant Professor of Chemistry, Mineralogy, and Geology in the Military Academy in 1870–1873 and 1879–1880; assistant Professor of Philosophy in 1875–1876; and Professor of Chemistry, Mineralogy, and Geology after 1880. He was assistant astronomer in the United States expedition to Tasmania to observe the transit of Venus in 1874–1875; and author of "Essential Principles of Chemistry," "Important Minerals and Rocks," etc.

Tilly, Johann Tserklæs, Count von, one of the most notable generals of the Thirty Years' War; born in the castle of Tilly, Brabant, Belgium, in February, 1559. Maximilian, Duke of Bavaria, appointed him commander of his forces, and in 1620, two years after the beginning of the Thirty Years' War, he utterly routed the Bohemians. During the next period of the contest he defeated in turn the two Protestant leaders. In 1622 he drove from the Palatinate Christian, Duke of Brandenburg, and in August next year defeated him in a three days' engagement at Stadtloo in Munsterchen. In 1625 he led the army of the Catholic League against Christian IV., of Denmark, who commanded the army of Lower Saxony, and defeated him in the battle of Lutter. Along with Wallenstein he forced the Danish king to agree to the disgraceful peace of Lubeck (1629). Next year Wallenstein was forced to resign the command of the imperial forces, and Tilly succeeded him. In May, 1631. Tilly sacked with ferocious cruelty the town of Hagdeburg. In September, 1631, Gustavus Adolphus defeated Tilly at Breitenfeld, and again at Rain on the Lech. In both battles Tilly was wounded. He died in Ingolstadt, April 30, 1632, a few days after his second defeat.

Tilt Hammer, a large hammer worked by steam or water power, and used principally in compacting the balls of iron as they come from the puddling furnace, and driving out the dross with which the iron is associated when in the form or pig, and some of which is removed by the reverberating flames of the furnace. It is also used in heavy forging.

Timber, trees cut down, squared, or capable of being squared, into beams, rafters, boards, planks, etc., to be employed in the construction of houses, ships, etc., or in carpentry, joinery, etc. The term is often used for all kinds of felled and seasoned wood. It is also a general term for growing trees yielding wood suitable for constructive purposes. The chief are fir, pine, oak, ash, elm, beech, sycamore, walnut, chestnut, mahogany, teak, etc.

In the United States there are 300 species of trees, the smallest of which grows to a height of 30 feet. In South America the number is much greater, and India possesses about 900 species of timber trees. The species in England do not exceed 30, and in France or Germany there are only a few more. Yet, though the kinds of wood are so much more limited in European countries, there are almost as few in general use in the United States as in Europe.

According to the United States census of 1900 there were 33,035 establishments engaged in the manufacture of lumber and timber products, employing $611,611,524 capital and 295,790 persons; paying $115,901,199 for wages and $317,923,548 for materials; and having an aggregate output valued at $566,832,984. In the fiscal year ending June 30, 1901, the exports of wood manufactures aggregated in value $11,099,643; and the imports of wood and wood manufactures, $19,754,205. The principal lumber-producing region is now that of Michigan, Wisconsin, and Minnesota; but here, as in the older States, the forests are being rapidly and ruinously depleted, and ere long the United States will be compelled to fall back for its chief lumber supply on the Pacific and Gulf States.

Timbrel, a kind of drum, tabor, or tabret, which has been in use from the highest antiquity, and is much the same as the tambourine.

Timby, Theodore Ruggles, an American inventor; born in Dover, N. Y., April 5, 1822; invented the revolving turret for the original "monitor," the mole-tower system of defense, the revolving-tower and shield system, the "American" turbine water wheel, and the method of firing heavy guns by electricity.

Time, the general idea of successive existence, or that in which events take place, space being that in which things are contained. Relative time is the sensible measure of any portion of duration, often marked by some phenomenon, as the apparent revolution of the celestial bodies, more especially on its axis. Time is divided into years, of the sun, or the rotation of the earth months, weeks, days, hours, minutes, seconds; but of these portions the

years and days only are marked by celestial phenomenon. The instruments employed for measuring time are clocks, watches, chronometers, hour-glasses, and dials; but the three first are those chiefly used.

Timoleon, a Greek general; born of a noble family at Corinth in the beginning of the 4th century B. C. In 344, when Timoleon was 50 years old, ambassadors from Syracuse arrived at Corinth inploring aid against Dionysius the younger, who was seeking to recover his authority over their city. Timoleon was made leader of the Corinthian expeditionary force, and ultimately made himself master of Syracuse, repelling the efforts of the Carthaginian allies in a great battle at Crimissus (339 B. C.). In six years he succeeded in clearing Sicily of tyrants, and in establishing free democratic constitutions. His work now done, he resigned his power and lived a private citizen profoundly respected, till his death in 337–336. His brilliant successes, his constant good fortune, and the tragic story of his disinterested sacrifices, make Timoleon a unique figure in ancient history. Plutarch and Cornelius Nepos have written his life.

Timothy ("one who honors God"), one of the companions of St. Paul on his missionary travels. Timothy was born either at Lystra or Derbe; his father was a Greek, his mother a Jewess. Both his mother, Eunice, and his grandmother, Lois, were Christians, having probably been converted by St. Paul on his first missionary tour through Lycaonia. Hence Timothy early knew the [Jewish] scriptures, probably with Christian interpretations, but his actual conversion seems to have been effected through the instrumentality of St. Paul, if, indeed, this be the meaning of the phrase "my own son in the faith." His constitution was feeble, sensitive, with a certain tendency to asceticism, yet not free from temptation to "youthful lusts." He was strongly recommended to St. Paul by the Christians at Lystra and Iconium. The apostle therefore chose him as missionary colleague, and had him circumcised for the sake of facilitating his work among the Jews. He thoroughly gained the confidence and affection of St. Paul, and was with him in Macedonia and Corinth (A. D. 52–53); and at Ephesus, from which he was dispatched for special duty to Corinth. Returning, he was with St. Paul when the second epistle to the Corinthians and that to the Romans were penned, as also when he passed through Asia Minor prior to his arrest, and during his imprisonment at Rome (A. D. 61–63). Probably about A. D. 64 he was left in charge of the Ephesian church. In Heb. xiii: 23 his own imprisonment and liberation are recorded. Tradition makes him ultimately suffer martyrdom, either in A. D. 96 or in A. D. 109.

The First Epistle of Paul the Apostle to Timothy.—An epistle addressed by St. Paul to Timothy. Some persons in the Ephesian church had taught, or appeared disposed to teach, a doctrine different from that of the apostle. Paul therefore, on departing from Macedonia, left Timothy behind to restrain these false teachers, pretentious men too much given to profitless "fables and endless geneaologies" (verse 4). Paul charged Timothy to preach the Gospel, defining it as a "faithful saying, and worthy of all acceptation, that Christ Jesus came into the world to save sinners." Various dates have been assigned it; one of the most probable is A. D. 56.

The Second Epistle of Paul the Apostle to Timothy.—An epistle written by St. Paul after he had become a prisoner in Rome in bonds, who had been at least once judicially examined, and been required to make his "answer," a crisis which, however, ended in his being "delivered out of the mouth of the lion." The evidence for the authenticity of the epistle is the same as that for the previous letter. Two dates assigned it are A. D. 63, and July or August A. D. 65. It seems to have been the last of St. Paul's epistles.

Timothy Grass, a hard coarse grass with cylindrical spikes from 2 to 6 inches long. It is used mixed with other grasses for permanent pasture, and grows best in tenacious soils. It is extensively cultivated in North America. Timothy Hanson first recommended it, hence its name. Swine refuse it.

Timrod, Henry, an American poet; born in Charleston, S. C., Dec. 8, 1827. He died in Columbia, S. C., Oct. 6, 1867.

Timur, called also Timur Beg and Timur Lenk (that is, Timur the Lame), and, by corruption, Tamerlane, a celebrated Oriental conqueror, of Mongol or Tartar race; born in the territory of Kesh, near Samarcand, in 1336. His ancestors were chiefs of the district, and Timur by his energy and abilities raised himself to be ruler of all Turkestan (1370). By degrees he conquered Persia, and the whole of Central Asia, and extended his power from the great wall of China to Moscow. He invaded India (1398), which he conquered from the Indus to the mouths of the Ganges, massacring, it is said, on one occasion 100,000 prisoners. On his way from India to meet the forces of Bajazet, the Turkish sultan, he subjugated Bagdad, plundered Aleppo, burned down the greater part of Damascus, and wrested Syria from the Mamelukes, after which he overran Asia Minor with an immense army. Bajazet's army was completely defeated on the plain of Ancyra (Angora), in 1402, and the Sultan was taken prisoner. The conquests of the Tartar now extended from the Irtish and Volga to the Persian Gulf, and from the Ganges to the Grecian Archipelago. He was making mighty preparations for an invasion of China when death arrested his progress at his camp at Otrar, beyond the Sir-Daria, in 1405, and his empire immediately fell to pieces.

TIMOTHY GRASS.

Tin, in chemistry, a white, metallic, easily fusible metal, not much affected by exposure to dry or moist air at ordinary temperatures, but becoming oxidized superficially when heated, burning with a brilliant flame if the temperature be raised sufficiently high.

In metallurgy, tin is a white metal, with a slight yellowish tinge, and a brilliant metallic luster. It is wanting in tenacity, but is extremely malleable at a temperature of 212°. What is ordinarily called tin in domestic language, is sheet-iron covered with a layer of tin. Copper is also very well fitted for being coated with this metal.

For the manufacture of tin plates, the best soft charcoal iron is obliged to be used. After it has been rolled and cut to the requisite size, its surface is made chemically clean by immersion for a few minutes in dilute sulphuric acid. The sheets are then heated to a red heat in a reverberatory furnace, withdrawn, allowed to cool, hammered flat, and passed between polished rollers, and then washed in dilute acid. This preparation is needed to free the surface of the iron from the slighest portion of oxide, to which the tin would not adhere. In order to tin them, they are plunged one by one into a vessel of tallow, from which they are transferred to a bath of tin. From this they are taken after a certain time, allowed to drain, and dipped again. The superfluous tin at the edge of the plate is removed by dipping it in the melted tin once more, and detaching it by giving the plate a sharp blow. The tin and iron form a perfect alloy with each other. The appearance known as moire metallique is given by sponging the surface of the tin with dilute nitro-hydrochloric acid, washed with water, and afterward varnished with plain or colored varnish. Copper is tinned in the same way, but with greater ease, it being so much less difficult to clean the surface of that metal than iron. Tinfoil is made by heating pure tin to the requisite thinness. The alloys of tin are numerous and important. The principal of these are Britannia metal, consisting of equal parts of brass, tin, antimony, and bismuth; pewter, 4 tin, and 1 lead; Queen's metal, 9 tin, and 1 each of antimony, bismuth, and lead; the various solders; bell-metal,

78 copper, 22 tin; bronze, copper, with 4 to 6 per cent. of tin; gun metal, 78 copper and 22 tin; and several others. Speculum metal, used for the mirrors of reflecting telescopes, is a steel-white, hard, brittle alloy, of 1 part of tin and 2 of copper. An amalgam of tin and mercury is used for silvering looking glasses. A sheet of tinfoil is laid on an edged slab of stone carefully levelled, and mercury is poured on it till it forms a layer ⅛ inch thick. Glass is laid down on this, and the table is tilted to let the superfluous mercury run off, weights being gradually placed on the glass to facilitate the operation. Tin ores are met with but in few localities.

Cornwall, Banca, Mexico, and some parts of Australia, are the only important tin yielding districts. The most celebrated tin mines are those of Cornwall, England, which have been worked uninterruptedly from the earliest historic periods. In the United States, crystals of the oxide of tin have been found in localities of Massachusetts, New Hampshire, New York, New Jersey, Virginia, California, Missouri, and perhaps in other States, but though some of the mines, as those of Missouri and California, seem promising, tin has not been worked profitably up to the present time.

THE TINAMOU.

Tinamou, the name given to a genus and family of birds occurring in South America, and allied in some respects to the ostrich and emu. They somewhat resemble a partridge, and vary in size from that of a pheasant down to that of a quail. The great tinamou is about 18 inches long, and inhabits the forests of Guiana.

Tincker, Mary Agnes, an American novelist; born in Ellsworth, Me., July 18, 1833. During part of the Civil War she was a volunteer nurse in Washington; in 1873–1887 she resided in Italy, visiting Spain, France, and England. She wrote: "The House of Yorke"; 'A Winged Word"; "Autumn," etc.

Tinder, any substance artificially rendered readily ignitable but not inflammable. Before the invention of chemical matches it was the chief means of procuring fire. The tinder, ignited by a spark from a flint, was brought into contact with matches dipped in sulphur. Tinder may be made of half-burnt linen, and of various other substances, such as amadou, touchwood, or German tinder.

Tinning, the art, act, or process of coating other metals with tin for the purpose of protecting them from oxidation or rust. Hollow ware is tinned inside, having been first thoroughly cleaned and heated, by pouring grain tin into the vessel and turning and rolling it about so as to bring it in contact with every part. Powdered rosin is used in the bath to prevent the formation of an oxide, and the surface of the ware is rubbed with cloth or tow to aid the process. In cold tinning an amalgam of tin and mercury is applied to the metal, the mercury being afterward driven off. Bridle bits, stirrups, and other small articles are tinned by immersion. Also, the coating or layer of tin so laid on. Also, canning; packing meat, vegetables, etc., in tins.

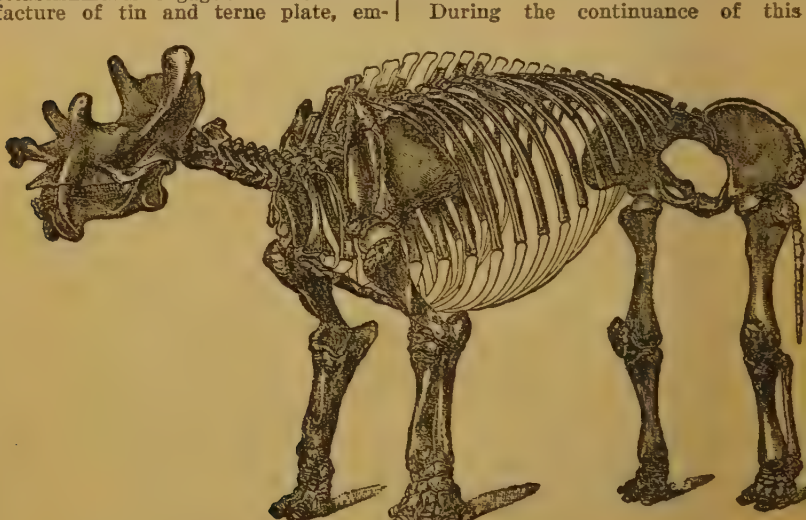
Tinoceras, or **Tinotherium,** a genus of mammals now extinct, found in the Eocene, and representing the order Dinocerata. The individuals were all large, some of them nearly equaling the elephants, while the brain was smaller than that of any living or fossil mammal.

Tin Plate. The manufacture of this article forms a branch of the iron trade. The art of tinning plate iron is said to have been invented in Bohemia, about the beginning of the 16th century, though the tinning of copper was known earlier.

The manufacture of tin plates is chiefly carried on in the United States and in South Wales. In 1890 the total exports from Great Britain amounted to 421,797 tons, valued at

$31,807,385; of this quantity 321,109 tons were sent to the United States. By the McKinley tariff of 1890 a high protective duty (2.2 cents per pound; lowered to 1.2; and again increased in 1897) was imposed on tin plates imported into the United States, in order to protect the manufacture there. In 1895 English exports were 366,120 tons, value $21,195,965.

According to the census of 1900 there were in the United States 57 establishments engaged in the manufacture of tin and terne plate, employing $6,650,047 capital and 4,004 persons; paying $2,181,240 for wages and $26,728,150 for materials; and having an aggregate output valued at $31,892,011.



RESTORATION OF SKELETON OF TINOCERAS INGENS.

Tippecanoe, a river of Indiana, which rises in the N. part of the State, flows W. S. W. and S. 200 miles, and empties into the Wabash 10 miles above Lafayette. It is famous for the battle fought near its mouth, Nov. 7, 1811, in which the Indians, under Tecumseh's brother, the prophet, were defeated by General Harrison.

Tippoo Sahib, more correctly, Tipu Sultan, Sultan of Mysore, and son of Hyder Ali; born in 1749. On the death of his father he was crowned with little ceremony, returning at once to the head of his army, which was then engaged with the British near Arcot. In 1783 he captured and put to death most of the garrison of Bednur; but news of the peace between France and England having reached his French allies, they retired from active service, and Tippoo ultimately agreed to a treaty (1784) stipulating for the status quo before the war.

During the continuance of this peace he occupied himself in regulating the internal administration of Mysore, sent ambassadors in 1787 to France to stir up a war with Great Britain, and failing in this, at length so far allowed his inveterate hatred of the English to overcome his judgment as to invade (1789) the protected State of Travancore. In the ensuing war (1790–1792) the British, under Colonel Stuart and Lord Cornwallis, were aided by the Mahrattas and the Nizam, who detested their powerful and aggressive neighbor; and though the tactics of the Sultan in laying waste the Carnatic almost to

the very gates of Madras baffled his opponents for a time he was ultimately compelled (1792) to resign one-half of his dominions, pay an indemnity of 3,030 lakhs of rupees, restore all prisoners, and give his two sons as hostages for his fidelity. Nevertheless his secret intrigues in India against the British were almost immediately resumed; another embassy was sent to the French; and the invasion of Egypt by the latter in 1798 and Tippoo's machinations having become known to the governor-general almost simultaneously, it was resolved to punish the perfidious Sultan. Hostilities commenced in March, 1799, and two months after Tippoo was driven from the open field, attacked in his capital of Seringapatam, and after a month's siege slain in the breach at the storming of the fort (May 4). He was buried, during an appalling thunderstorm, in the mausoleum he had built for his father. His government of Mysore after 1792 was most oppressive, yet Tippoo was extremely popular, and was esteemed by the Mohammedans as a martyr.

Tippoo Tib, a famous Arab trader in Central Africa. He accompanied Stanley on the occasion of the latter's second expedition to Africa from Nyangwe to the banks of the Lualaba; in 1887 Stanley appointed him Governor of Stanley Falls Station, a stated salary being guaranteed him, he also assisted Stanley in his search for Emin Bey in 1887–1889.

Tisdall, Fitzgerald, an American educator; born in New York city, March 15, 1840; was graduated at the College of the City of New York in 1859; Professor of Greek Language and Literature in the College of the City of New York after 1879. He lectured extensively; visited Europe several times; and was a member and councillor of the American Institute of Archæology and a member of the American Philological Association.

Tisri, in the Jewish calendar, the first month of the civil, and the seventh of the ecclesiastical year. It corresponded to part of our September and October. The Great Day of Atonement and the Feast of Tabernacles fell within its limits. It is also called in I Kings vii: 2, Ethanim.

Tissues, (1) in animal anatomy, the texture or grouping of anatomical elements of the systems of which the organs are composed. Thus in special histology we speak of muscular tissue, or flesh; osseous tissue, or bone; adipose tissue, or fat; cartilaginous tissue, or gristle; pigmentary tissue, or coloring matter seen in the skin, etc.; areolar, cellular, or connective tissue, widely distributed in every part of the body, and serving to bind together and consolidate other parts and tissues. (2) In vegetable anatomy, the minute elementary structures of which the organs of plants are composed. Plant tissues are composed of elementary membrane and elementary fibre, and the principal forms under which they exhibit themselves constitute cellular tissue, fibrous tissue, and vascular tissue.

Tithe, etymologically a 10th, historically a 10th part of the tithable produce of the land paid to the clergy. The payment of tithe to the clergy originated in the recognition of a moral and religious duty. The discharge of this acknowledged obligation acquired the force of custom, then received the sanction of ecclesiastical law, and finally passed into the national jurisprudence of England and other Christian countries.

The first recorded instance of the payment of tithes is the offering of Abraham to Melchisedec, the second precedent is the vow of Jacob at Bethel. The consecration of a fractional portion of the produce of the land to the uses of the ministers of religion formed part of the Mosaic law. The tribe of Levi were maintained from this source, not having lands assigned to them like the other tribes. Neither patriarchal usage, nor precedents of Mosaic law, nor the Levitical economy were binding on Christians; but they doubtless suggested to the clergy the precept, and to the people the practice, of paying tithes to the ministers of religion. In the early part of the nineteenth century, contributions for the support of the clergy, commonly and officially known as tithes, were exacted in Massachusetts. Refusal to pay tithes caused riots in Wales, England, a few years ago.

Titian, or **Tiziano, Vecellio,** one of the most distinguished of the great Italian painters, and head of the Venetian school; born in Pieve de Cadore, in the Carnic Alps, in 1477. In 1511 he was invited to Padua, where he executed three remarkable frescoes still to be seen. In 1512 he completed the unfinished pictures of Giovanni Bellini in the Sala del Gran Consiglio at Venice, and the senate were so pleased that they gave him an important office. In 1514 he painted a portrait of Ariosto at Ferrara, and after his return to Venice he painted an "Assumption of the Virgin" (1516), considered one of the finest pictures in the world; it is now in the Academy of the Fine Arts in Venice. About 1528 he produced his magnificent picture, "The Death of St. Peter the Martyr" unfortunately destroyed by fire in 1867. In 1530 the Emperor Charles V. invited him to Bologna to paint his portrait and execute various other commissions. In 1532 he again painted the emperor's portrait, and he accompanied Charles to Madrid, where he received several honors. He remained three years in Spain, in which country many of his masterpieces are still to be found. In 1545 he visited Rome, where he painted the famous group of Pope Paul III., the Cardinal Farnese, and Duke Ottavio Farnese. He was patronized as warmly by Philip II. as by his father Charles V. Of Titian's private life but little is known. He died of the plague in 1576 aged 99, having painted to the last with almost undiminished powers.

Titicaca, a remarkable lake, in the heart of the Andes; partly in Peru and partly in Bolivia; 12,545 feet above the sea-level. It is 120 miles in length, with an average width of from 50 to 60 miles. The S. portion, measuring 24 by 21 miles, is almost severed from the main body of the lake by a projecting peninsula. The lake discharges at its S. W. extremity by the Desaguadero into the salt Lake Aullagas, which has no known outlet. The lake is deep and stormy, so that ice forms near the shores only. It contains a number of strange fishes, and eight species of marine crustaceans, which seem to indicate that it was once at the sea-level. There are eight inhabitable islands, the largest being Titicaca, which gave its name to the lake, and has an area of 20 square miles. It was the sacred island of the Incas, who laid it out in terraces planted with consecrated maize and flowers, and irrigated by channels supplied from the royal bath at the top. The lake is now navigated by steamers, and may be reached by railway from the seaport of Mollendo, 346 miles distant.

Titiens, or **Tietjens, Teresa,** a German operatic singer; born in Hamburg, Germany, July 18, 1831. She appeared as Lucrezia in her native town in her 16th year, and her subsequent engagements at Frankfurt and Vienna had established her position as the chief lyric artist in Germany before her debut in London, on April 13, 1858. Her success here was so decided that she made that country her future home, and it was the peculiar scene of her triumphs. In the concert room and in oratorio her success was unequivocal. She died in the full maturity of her powers on Oct. 3, 1877.

Title, an appellation; a name. Also, an appellation of dignity, distinction, or preëminence given to persons; as, titles of honor, which are words or phrases belonging to certain persons as their right in consequence of certain dignities being inherent in them or conferred on them; as emperor, king, czar, prince, etc. In the United States there are no titles of distinction save those of professional men, which are conferred by authorized institutions as rewards for distinguished merit.

In law: (1) Property or right of ownership, or the sources of such right, or the facts and events which are the means whereby property is acquired; a party's right to the enjoyment of land or goods, or the means whereby such right has accrued, and by which it is evidenced. (2) The instrument or instruments which are evidence of a right. (3) A heading or indorsement; as, the title of an Act of Congress.

Titmouse, in ornithology, a popular name for any individual of the sub-family Parinæ. They are remarkable for the boldly defined color of

their plumage and their quick, irregular movements, running rapidly along branches in quest of insects, and often clinging thereto with their back downward. They feed not only on insects, but on grain and seeds, and not infrequently kill young and sickly birds with strokes of their stout, strong bill. They are very pugnacious, and the hens show great courage in defense of their nests. The chickadee, so named from its note, is the blackcap titmouse of North America.

Titular Church, a name given to the parish churches of Rome, as distinct from the patriarchal churches, which belonged to the Pope, and from the oratories. Each titular church was under a cardinal priest.

Titus, the Roman prænomen but the 11th of the 12 Cæsars, Titus Flavius Sabinus Vespasianus, the eldest son of Vespasian and Flavia Domitilla; born in Rome, Dec. 30, A. D. 40. He was brought up at the court of Nero and early served with credit as tribune in Germany and Britain, and in Judæa under his father. On Vespasian's elevation to the throne Titus was left to prosecute the Jewish war, which he brought to a close by the capture of Jerusalem after a long siege (70). About this time Titus received the title of Cæsar, and took a share in the work of government. He gave himself up to pleasure, and his attachment to Berenice, the daughter of Herod Agrippa I., offended the Romans. But no sooner had Titus assumed the weight of undivided power (79) than his whole character changed. The first act of his reign was to put a stop to all prosecutions for læsa majestas, and to decree heavy punishments against reformers. He completed the Colosseum and built the baths which bear his name, and lavished his beneficence on the sufferers from the great eruptions of Vesuvius, and the great three days' fire at Rome, followed by pestilence the year after. He died suddenly at his patrimonial villa in the Sabine country, Sept. 13, 81, not without the suspicion that he had been poisoned by his younger brother Domitian.

Titus, a companion of St. Paul, though not mentioned in the Acts of the Apostles. He seems to have been converted by the apostle (Tit. i: 4), probably at Antioch A. D. 50 or 51, and in the same year accompanied him to Jerusalem, and was present at that first council which recognized Gentile converts as part of the Church, and exempted them from the burden of the Mosaic ritual. Paul soon afterward practically carried out the liberty thus accorded by refusing to require Titus, who by birth was a Greek, to be circumcised. Titus was subsequently with Paul at Ephesus (A D. 56), whence the former was sent on a special mission to the Corinthians. When Titus returned (A. D. 57) he found the apostle in Macedonia. Subsequently (probably A. D. 65 or 66) he was left in Crete to arrange the affairs of the Church and "ordain elders in every city." Returning thence to Rome he was dispatched by Paul (A. D. 66 or 67) to Dalmatia. According to tradition Titus returned to his work in Crete, and died a natural death at an advanced age.

The Epistle of Paul to Titus, the third of St. Paul's pastoral epistles, was written to give Titus directions respecting the organization of the Cretan Church. After an introduction, the apostle lays down the qualifications of a scriptural bishop, gives a warning against Judaizers and other false teachers, affords directions as to the special duties of aged men and women, young men and women, servants, and subjects, and social duties, the whole interspersed with evangelical doctrine and precept. He concluded by instructing Titus how to deal with heretics, and asking him to come to Nicopolis, where he (Paul) hopes to winter, and sends salutations. There is a considerable resemblance between some passages in Titus and others in the Epistles to Timothy.

Toad, in zoölogy, the popular name of any species of the family Bufonidæ, which is almost universally distributed, but is rare in the Australian region, one species being found in Celebes and one in Australia. Three species are European. The common American species is more active than the European species, moving principally by leaping. The body is swollen and heavy-looking, covered with a warty skin, head large, flat, and toothless, with a rounded, blunt muzzle. There

is a swelling above the eyes covered with pores, and the parotids are large, thick, and prominent, and secrete an acrid fluid; when handled or irritated these animals can eject a watery fluid from the vent. But neither the secretion from the parotids nor the ejected fluid is harmful to man, and there is little doubt but that its effects on the lower animals have been much exaggerated. The toad has four fingers and five partially webbed toes. Toads are terrestrial, hiding in damp, dark places during the day, and crawling with the head near the ground. They are extremely tenacious of life, and can exist a long time without food.

Tobacco, a very important plant, belonging to the natural order Atropaceæ, or night-shade order. The introduction of the use of tobacco forms a singular chapter in the history of mankind. According to some authorities smoking was practised by the Chinese at a very early date. At the time of the discovery of America, tobacco was in frequent use among the Indians, and the practice of smoking, which had with them a religious character, was common to almost all the tribes. The name tobacco was either derived from the term used in Haiti to designate the pipe, or from Tabaca in Santo Domingo, whence it was introduced into Spain and Portugal in 1559 by a Spaniard. It soon found its way to Paris and Rome, and was first used in the shape of snuff. Smoking is generally supposed to have been introduced into England by Sir Walter Raleigh. It was strongly opposed by both priests and rulers. Pope Urban VIII. and Innocent IX. issued bulls excommunicating such as used snuff in church, and in Turkey smoking was made a capital offense. In the canton of Bern the prohibition of the use of tobacco was put among the 10 commandments immediately after that forbidding adultery. The "Counterblast" or denunciation written by James I. of England is a matter of history. All prohibitions, however, regal or priestly, were of no avail, and tobacco is now the most extensively used luxury on the face of the earth.

The most commonly cultivated tobacco plant (Nicotiana tabacum) is glutinous, and covered with a very short down. A less esteemed species is N. rustica, distinguished by a short yellowish-green corolla. The best Havana cigars are made from the leaves of N. repanda. All the tobacco plants are natives of America, and that continent has continued the principal producer, the chief tobacco-growing country being the United States, and the chief localities being Virginia and Kentucky. It was first cultivated in Holland early in the 17th century, and soon extended to other countries. The cultivation in Great Britain was forbidden from an early date till 1866, when it was permitted under certain conditions.

Tobacco owes its principal properties to the presence of a most poisonous alkaloid named Nicotine. Cigars, cigarettes, and cheroots are favorite forms of manufactured tobacco. As the best leaf is grown in Cuba, so also are the best cigars made there. The leaf used for the manufacture of Manila cheroots is grown chiefly on the island of Luzon.

Tobacco Sugar, a mixture of saccharose, dextrose, and levulose, in tobacco leaves, which have been preserved from any undue fermentative action. The sugars, separated as a lime compound, decomposed with oxalic acid, and purified by animal charcoal, yielded results approximating to a cane sugar, dextrose, and levulose. The first-named differs from ordinary cane sugar by refusing to crystallize.

Tobit, in the Apocrypha, a book generally placed between II Esdras and Judith, and containing 14 chapters. A pious man, Tobit by name, resident in Thisbe in Naphthali, was taken captive by Enemessar (Shalmaneser), King of Assyria, and located in Nineveh. When his countrymen were put to death by the king's order, their bodies were thrown into the streets. Tobit made a practice of burying them. Once, when he had buried a body, and, being ceremonially unclean, was sleeping outside by the wall of his courtyard, "the sparrows muted warm dung" into his eyes and made him blind. In the days of his prosperity he had lent 10 talents of silver to a countryman, Gabael, who lived at Rages in Media. At another Median city, Ecbatana, was a relative of his called Raguel, whose daugh-

ter Sara had been married to seven husbands, all of whom had been killed by Asmodeus, the evil spirit. To recover the lent money, Tobit dispatched his son Tobias, having as his companion a man-servant. The two set out for Rages, taking Ecbatana on the way. As Tobias was bathing in the Tigris, a fish leaped out of the water, attempting to devour him; but he caught his assailant, which was cooked and devoured by the travelers, the heart, the liver, and gall being kept by Tobias, on the advice of his companion, the heart and liver to be smoked for the expulsion of evil spirits from persons possessed, and the gall to remove whiteness in the eye. Arrived at Ecbatana, he married the maiden, smoking out the evil spirit who would have made away with him. During the marriage festivities the companion was dispatched to Rages for the lent money, and obtained it, the two ultimately returning with the bride to Nineveh to Tobit, whose blindness was cured by the gall of the fish. When the time came for paying the servant, he declined all compensation, and revealed himself to be Raphael, one of seven angels of exalted rank and function. Sincere thanksgiving followed to God, who had sent the angel. By direction of Tobit, Tobias removed from Nineveh, the destruction of which had been prophesied by Jonah.

Viewed as a tale designed to commend piety and trust in God, the book of Tobit evinces genius, the plot being well sustained, and some of the scenes, depicting domestic life, being beautifully drawn.

Tobogan, or **Toboggan,** a kind of sled used for sliding down snow-covered slopes. It is simply a piece of birch or basswood, a quarter of an inch thick, from five to eight feet long by one or two broad, bent up in front like the dashboard of a sleigh, and braced by several cross pieces of hard wood a foot apart, and by two round rods, one on each side, on top of the cross pieces, all fastened by catgut to the sleigh. The bend at the bow is strengthened by two cross pieces, and kept in shape by catgut strings at the ends bound to the front cross piece and rod. Grooves are cut on the under side of the tobogan to let the knots sink below the wood. Also a sled to be drawn by dogs over snow.

Tocqueville, Alexis Charles Henri Maurice Clerel de, a French politician; born in Verneuil, July 29, 1805. His father was Herve Louis Francois Joseph Bonaventure Clerel, Comte de Tocqueville (1772–1856), peer of France, politician and historian, and a writer of some merit. The son was sent in 1832 by the French government, along with his friend M. de Beaumont, to the United States to inspect and report on the American prison system. They published a joint work on their return, entitled "Of the Penitentiary System in the United States and its Application in France." This treatise, which was crowned by the Academy, recommends the solitary confinement of prisoners. In 1832 Tocqueville resigned his office under government, and after a brief visit to England, gave himself up to the composition of the first of his two great works, "Democracy in America." This work was received with the favor it deserved; the Academy awarded to it a special prize of $8,000 francs, and a quick succession of honors was bestowed on the author. In 1837 he was appointed chevalier of the Legion of Honor; in 1839 he was chosen by the electors of Valagnes as their representative; and in 1841 he was elected member of the Academy. For some years practical politics occupied all his attention. In 1849 he entered the Odilon Barrot Cabinet as minister of foreign affairs, but the coup d'etat of Dec. 2 — to which, as may be imagined, he was strongly opposed — drove him from office. He then occupied himself with "The Old Government and the Revolution" (1856, 7th ed. 1866). This is his greatest work. This work, powerful as it is, was but a fragment of the original design. Tocqueville intended to follow it up by others dealing with the great events in the later history of France. He was engaged at these when he died in Cannes, April 16, 1859.

Tocsin, an alarm bell, or the ringing of a bell for the purpose of giving an alarm. The use of the tocsin, during the troubles of the French Revolution, to assemble the multitudes,

has rendered the word almost proverbial.

Todars, Todawars, or **Tudas,** the name of a singular race of people found in the upper part of the Neilgherries, in Southern India. They are a fine, muscular race, of pastoral habits of life; possess a peculiar, unwritten language of their own; worship the sun; practise polyandry; assert that their ancestors were the aboriginal inhabitants of Hindustan; levy a tithe of one-sixth of the crops of various agricultural tribes, they themselves holding aloof from the culture of the soil.

Toddy, the name generally given by Europeans to the sweet, refreshing liquors which are procured in the tropics by wounding the spathes or stems of certain palms, on which the sap and juices exude from the trunks or from the fruit stalks.

Also a mixture of spirit and water sweetened; as, whisky toddy. Strictly speaking, toddy differs from grog in being always made with boiling water, while grog is made with cold water, but the latter word is often used in the same sense as toddy.

Toga, the principal outer garment and characteristic national dress of the ancient Romans. The right of wearing it was the exclusive privilege of citizens, its use being forbidden to Peregrini and slaves. It was, moreover, the garb of peace, in contradistinction to the sagum of the soldier. The ordinary mode of wearing it was to throw the whole toga over the left shoulder, leaving one extremity to cover the left arm, and to bring it round the back and under the right arm, which remained at liberty, the second end being carried again over the left shoulder. In this way, the broadest part of the cloth hung down in front, a large bunch or mass of plaits, termed umbo, lay across the breast, and the second extremity, which was carried across, served as a sort of belt to secure the whole. It was a loose robe, made of wool, sometimes of silk.

Tokens, pieces of money current by sufferance, and not coined by authority; or coins only nominally of their professed value. In England tokens first came into use in the reign of Henry VIII., owing to the want of authorized coins of value lower than a penny. Stamped tokens of lead, tin, and even leather were issued by vintners, grocers, and other tradesmen during the time of Elizabeth, and were extensively circulated, being readily exchanged for authorized money at the stores where they were issued. A currency of this kind (mostly of copper) was much used in Great Britain during the close of the 18th century, and was used in the United States during the Civil War.

Tokyo, formerly called Yeddo, the capital of Japan, and chief residence of the mikado; on a bay of the same name; on the S. E. coast of Hondo, the largest of the Japanese islands, and connected by rail with Yokohama and Kanagawa. The bulk of the houses are of wood, but there are many new buildings of brick and stone, and an imperial palace has been erected near the center, as also public offices, etc. The greater part of the town is flat, and intersected by numerous canals crossed by bridges. The streets are generally narrow and irregular. Gas has been introduced, and the sanitary arrangements have been improved. Education is well organized, and there are nearly 700 private and elementary schools. Tokyo contains the imperial university, and it may be considered the center of the political, commercial, and literary activity of Japan. Pop. 1,452,564.

Toledo, a city and county-seat of Lucas co., O.; on the Maumee river, the Miami and Erie canal; 113 miles W. of Cleveland. The river is here navigable for the largest lake steamers. Toledo has regular steamboat communication with all ports on the Great Lakes, and the many railroads which touch here give it connection with a vast region. It is, therefore an important distributing point for produce and manufactures. It is especially known as a clover seed and soft-coal market. The city has a number of large grain elevators, with a storage capacity of over 5,000,000 bushels. The manufactures include carriages, wagons, pumps, steam engines, agricultural implements, furniture and cabinet ware, boats, bicycles, malt liquors, coffee and spice, flour and grist, lumber products, etc.

It also has flour mills, machine shops, and large shipbuilding interests.

Toledo was early known as the "Miami of the Lakes." Later it became known as the "Lady of the Lakes." Prior to its settlement by the whites the Miami Indians inhabited its site. The place was long a trading post, and it was not till 1794, when Gen. Anthony Wayne won his great victory at Fallen Timbers, that the colonists were enabled to occupy it peaceably. Pop. (1890) 81,434; (1900) 131,822.

Toledo, a famous city of Spain; capital of a province, and long the capital of the whole country; on the N. bank of the Tagus, by which it is encompassed on three sides, 40 miles S. S. W. of Madrid. It is situated on a number of hills, 2,400 feet above sea-level; and the climate, excessively hot in summer, is bitterly cold in winter. In the middle of the city rises the lofty, massive cathedral, surrounded by numerous churches and convents, mostly deserted. The cathedral, built in 1227–1493, on the site of a former mosque (consecrated to Christian uses in 1086, but pulled down to make way for the new church), is a large oblong edifice with semicircular apse, and belongs to the simplest, noblest style of Spanish-Gothic, with a few touches of the florid Gothic, classical, and Saracenic styles. Toledan sword blades, famous since old Roman times, are still made, but outside the city. Pop. 20,837.

Toleration, the act of tolerating or enduring; allowance of something not wholly approved. Specifically, the recognition of the right of private judgment in matters of faith and worship; the liberty allowed by a government to every individual to hold or publicly teach his own religious opinions, and to worship how, when, and whom he pleases, provided he does not violate thereby the rights of others or infringe laws made for the maintenance of decency, morality, and good order, or for the security of the State. In Article VI. of the Constitution of the United States it is ordained that "No religious test shall ever be required as a qualification to any office or public trust under the United States"; and in Article I., in addition to an amendment of the Constitution, it is further ordained that "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof." Nevertheless many years elapsed before full religious toleration was established by law in all the New England States.

Toleration Act, the name given to a statute of William and Mary, under which freedom of worship was granted to Protestant dissenters from the Church of England, provided they made a declaration against transubstantiation, and took the oaths of allegiance and supremacy. This act has been so amended and extended from time to time that now all dissenters, Roman Catholics, Jews, and all other sects alike enjoy all the privileges of the constitution.

Toll, a tax paid, or duty imposed, for some liberty or privilege or other reasonable consideration; such as (a) the payment claimed by the owners of a port for goods landed or shipped there; (b) the sum charged by the owners of a market or fair for goods brought to be sold there; (c) a fixed charge made by those intrusted with the maintenance of roads, streets, bridges, etc., for the passage of persons, goods, and cattle.

Tolman, Herbert Cushing, an American educator; born in South Scituate, Mass., Nov. 4, 1865; was educated at Yale and Berlin Universities; became Professor of Greek at Vanderbilt University in 1894.

Tolstoy, Count Lyof Alekseevich, a Russian novelist; born on the family estate of Yasnaya Polyana in the province of Tula, Russia, Sept. 9, 1828. He served in the Crimean War, and afterward traveled extensively. In 1861 he took up permanent residence on his country estate. Among his earliest works are: "Detsvo" (Childhood), "Otrchestvo" (Boyhood), and "Iunost" (Youth); also "Cossacks," "Sevastopol," and a number of military sketches. "War and Peace" was published in 1865–1868; "Anna Karenina" in 1875–1878. His peculiar doctrines are promulgated in "My Confession," "In What My Faith Consists," etc.; many of them are forbidden in Russia. His later works are: "The Kreutzer Sonata"; "Death of Ivan Ilyitch"; "Master

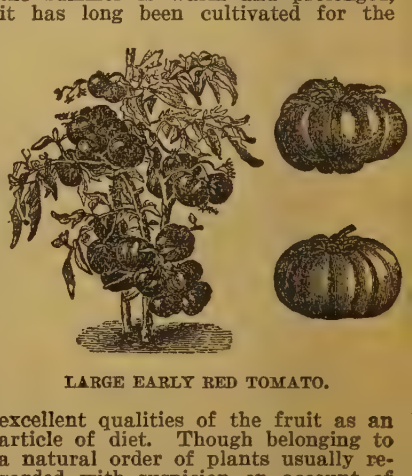
and Man." Nearly all have been translated into English and most other modern languages.

Toltecs, a Mexican race who are supposed to have been supreme in Central America from the 7th to the 11th centuries. They were completely obliterated by the Aztecs and Tezcucans, who held the country when the Spaniards first landed. The latter races were of a martial spirit, but they were indebted for their arts, their civilization, and their religion to their milder predecessors. The Toltecs present striking analogies to the Etruscans, and in a less degree to the Egyptians and Assyrians. They were great builders, and their religion was a mystic system of great complexity, intimately connected with the study of astronomy, and interpreted by a priesthood, who formed an exclusive caste.

Tom, popularly known as Blind Tom, an American musician; born of negro slave parents, near Columbus, Ga., May 25, 1849. He was blind from his birth, and the only sign of intelligence he gave during infancy was an interest in music. When he was four years old he was found one night reproducing on the piano pieces which the young ladies in his master's house had been playing during the day. There is no other instance in musical history, where one so young as Blind Tom was has shown so great an attainment in the power of reproduction and phonetics. Tom made his first appearance in New York, Jan. 15, 1861, and afterward traveled extensively in the United States and Europe, performing astonishing feats on the piano.

Tomahawk, an Indian hatchet or ax used in war and in the chase, not only in hand-to-hand combats, but also by being thrown to a considerable distance so as to strike the object with the sharp edge. The native tomahawks have heads of stone attached by thongs, etc., but steel tomahawks are supplied to the Indians by the governments and traders with whom they deal, and a pipe is usually attached to the poll. A hole is drilled through the bottom of the bowl and the poll of the ax, to meet one passing through the length of the handle. As a nautical term, a poleax. To bury the tomahawk, means to make peace; it being the custom of the Indians to bury the tomahawk during the time of peace; so, to dig up the tomahawk means to go to war, to fall into dispute.

Tomato, or **Love Apple,** a plant of the natural order Solanaceæ. It is one of a genus of several species, all natives of South America, chiefly on the Peruvian side. In the United States and other countries in which the summer is warm and prolonged, it has long been cultivated for the



LARGE EARLY RED TOMATO.

excellent qualities of the fruit as an article of diet. Though belonging to a natural order of plants usually regarded with suspicion on account of the powerfully poisonous properties of many of the species comprised in it, it is now recognized as one of the most important and valuable of vegetables grown for human food.

Tomb, a monument erected over a grave in order to mark the resting place, and preserve the memory, of the deceased. In early ages, and among Eastern nations, it sometimes became the practice to place the remains of the dead in excavated sepulchers, whose interior was often decorated with painting or otherwise. Where the usage was to burn the dead their bones and ashes were placed in urns in these receptacles. Some of the most remarkable rock tombs were those of Egypt. The rock tombs of Persia and Lycia have imposing architectural facades.

Tome, Jacob, an American philanthropist; born in Manheim town-

ship, York co., Pa., Aug. 13, 1810; went to Port Deposit, Md., in 1833. In 1884 he presented to Dickinson College a valuable building for scientific uses. His largest gift was for the foundation of the Jacob Tome Institute, at Port Deposit, $1,600,000, a sum that was increased by his will to more than $3,500,000. He died in Port Deposit, Md., March 16, 1898.

Tomes, Robert, an American physician and author; born in New York city, March 27, 1817. Besides many contributions to journals and periodicals, he published: "The Bourbon Prince"; "Richard the Lion-Hearted," etc. He died in Brooklyn, N. Y., Aug. 28, 1882.

Tomlinson, Everett Titsworth, an American author; born in Shiloh, N. J., May 23, 1859. He published numerous juvenile stories, including: "The Search for Andrew Field"; "The Boy Soldiers of 1812"; "The House Boat on the St. Lawrence," etc.

Tommy Atkins, a name given to the privates of the British army. It is said to have originated in the custom of making out blanks for military accounts with the name. "I, Tommy Atkins," etc. Kipling has immortalized it in verse.

Tompkins, Charles H., an American military officer; born in Fort Monroe, Va., Sept. 12, 1830; studied at the United States Military Academy; began his active military career in 1856. He was promoted 1st lieutenant in the 2d United States Cavalry in April, 1861. During his service in the defense of Washington he distinguished himself on the night of May 31, 1861, by making one of the first cavalry reconnoissances of the war. At the head of the 5th Cavalry he charged through Fairfax Court House, Va., three times and captured two outposts. In recognition of his gallantry during the war he was brevetted Brigadier-General in March, 1865. He was chief quartermaster of the principal divisions of the army in 1865–1888; was then made chief quartermaster of the Division of the Atlantic; and was retired with rank of colonel, Sept. 12, 1894. Died 1895.

Tompkins, Daniel D., an American statesman; born in Fox Meadows, Westchester co., N. Y., June 21, 1774. He was a member of Congress in 1804–1807, when he resigned to become Judge of the Supreme Court of New York. He was governor in 1807–1817 and Vice-President of the United States in 1817–1825. He was a delegate to the State Constitutional Convention of 1821, contributed money and troops to the national government in the War of 1812, during which he commanded the 3d Military District; and in a message to the New York legislature in 1817, recommended the total abolition of slavery in that State, an act which brought about the passage of the bill against slavery which took effect on July 4, 1827. He died in Staten Island, N. Y., June 11, 1825.

Toner, Joseph Meredith, an American physician; born in Pittsburg, Pa., April 30, 1825; settled in Washington, D. C., in 1855. He was the originator of the American Medical Association Library, founded in Washington in 1868, and made a part of the Smithsonian Institution. He invented the system of symbols of geographical localities which the United States Postoffice Department adopted for its publications. He was the author of numerous medical works. In 1882 he presented his library of 26,000 volumes and 18,000 pamphlets to the United States government. Died in Washington, D. C., Aug. 1, 1896.

Tonga, or **Friendly Islands,** a group in the S. Pacific Ocean, forming an archipelago of very considerable extent, and consisting of more than 150 islands, the greater part of which are either mere rocks or shoals, or desert spots. Most of them are of coral formation; but some of them are volcanic in their origin, and in Aofua there is an active volcano. The principal member of the group is Tongatuba or Sacred Tonga. The Tonga Islands were discovered by Tasman in 1643, but were named by Captain Cook, from the firm alliance that seemed to subsist among the natives, and from their courteous behavior to strangers. Total area, 374 square miles; pop. 17,500.

Tongue, in human anatomy, a muscular organ in the mouth, covered with mucous membrane, the muscular structure rendering it of use in mastication, deglutition, and the articulation of speech, while the mucous mem-

brane, which is endowed with common and tactile sensibility, constitutes it the seat of the sense of taste.

Tongues, Confusion of, the penalty inflicted on the builders of Babel when God so confounded their language that they could not understand each other, though up to that time there had been among them only one language. The result was that the building of the tower was abandoned, and those who had been engaged in its erection were dispersed over various lands (Gen. xi: 1-9).

Tongues, Gift of, a gift bestowed in connection with the Pentecostal descent of the Holy Spirit. When the members of the Church had assembled with one accord on the Jewish day of Pentecost, suddenly a mighty, rushing wind entering, pervaded the building in which they had assembled, and cloven tongues as of fire descended on each, and those on whom they were bestowed began to speak with "other tongues, as the Spirit gave them utterance" — the Parthians, Medes, Elamites, and others, who repaired to the place when news of the miracle reached them, bearing testimony to its reality (Acts ii: 1-21). Three explanations of this mysterious gift have been offered: (1) That on the day of Pentecost the disciples deceived a supernatural knowledge of all such languages as were needed for their work as evangelists. (2) That the gift consisted in the impression produced on the hearers, and that the words uttered by the disciples in Aramaic were heard by those who listened as in their native speech. (3) That the "tongues" consisted of ecstatic bursts of praise which the disciples might have heard uttered at previous feasts of Pentecost by foreign pilgrims. In this case there would be a supernatural exaltation of memory, not a miraculous knowledge of words never heard before. (4) That they were cries of ecstatic devotion of no definite significance except to those who uttered them.

Tonnage, in regard to ships, a measure both of cubical capacity and of dead-weight carrying capability. The term, used by itself, may have reference severally to "builders' old measurement" tonnage (B. O. M.), "register" tonnage, "displacement" tonnage, "freight" tonnage, etc., each of which expressions is more or less current in shipping circles. From very early times in the history of shipping a scale of one sort or other must have been employed to determine the relative capacity or carrying power of different vessels, and in point of fact the term "tonnage" in this connection can be traced back for at least 500 years. In Great Britain the first Act of Parliament dealing with the subject was passed in 1422, a second was introduced in 1694, and a third in 1720, but the application of these was limited to particular classes of ships, or those employed in particular trades.

Tonsilitis, inflammation of one or both of the tonsils, generally extending also to the palate and uvula. It brings with it dryness, pain, and heat of the throat, with difficulty of swallowing, and often ends in abscesses, one at least of which suppurates. It is a common disease in moist variable weather.

Tonsils, in anatomy, two glands, one on each side of the palate between its pillars. They consist of a number of deep mucous follicles surrounded by and deposited in cellular tisue arranged in a somewhat circular form. The chief diseases which affect the tonsils are inflammation and hypertrophy of their substance, or the morbid influence may be specially concentrated on the follicles alone.

Tonsure, in ecclesiology and Church history, the shaving of the crown in a circle, which is a distinguishing mark of clerics in the Roman Church. Most of the mendicant and cloistered orders allow only a narrow strip of hair to grow round the head, all above and below being shaved; the tonsure of secular clerics is small. The tonsure is a necessary preliminary to entering the clerical state, whether secular or religious; in the former case it is conferred by the bishop of the diocese, in the latter by the head of the religious house, if a mitered abbot. It invests the receiver with all the privileges of a cleric, and furnishes a means to distinguish the higher from the lower clergy, as the extent of the tonsure increases with the rank till the priesthood is reached.

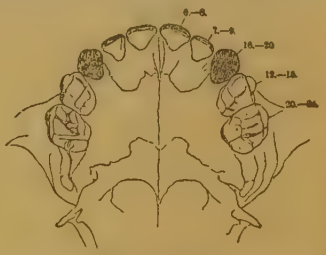
Tontine, a term derived from the name of Lorenzo Tonti, a Neapolitan,

who settled in Paris in Cardinal Mazarin's time, and proposed in 1653 to raise a fund of $125,000,000 for the relief of the national exchequer by means of a financial association, of which the great prize should ultimately accrue to the longest liver. There were to be shares of $1,500. The subscribers were to be divided into 10 classes according to age; and for each class a fixed sum was annually to be divided equally among the members of the class. In this way, while each member should get fair interest from the first on his capital, the profit falling to the survivors would increase as years went on, and the last survivor would receive the whole of the interest due to the class he belonged. Mazarin and Tonti were both Italians, and regarded in Paris with suspicion, and, in spite of the cardinal's support, the scheme fell through. In 1689–1692 Louis XIV., sorely in need of money, reverted to the plan of the Italian adventurer, and raised a sum of $70,000,000 by a tontine of 40 years' duration. The sole survivor was in 1726 drawing an annuity of $367,500 on his original share of $1,500. The tontine is a lottery of annuities — or compound of lottery and annuity — and was frequently had recourse to in France in the 18th century, with government sanction.

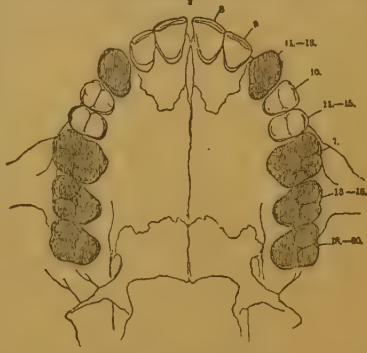
Toombs, Robert, an American statesman; born in Wilkes co., Ga., July 2, 1810; was a Whig member of Congress from Georgia in 1845–1853; and a United States Senator in 1853–1861. He was expelled from the Senate in 1861, and in the same year was elected to the Confederate Congress and also became Confederate Secretary of State. He resigned to become a Brigadier-General in the Confederate army. After the war he resided abroad till 1867. He refused to take the oath of allegiance to the United States government, being to the end of his life bitterly opposed to the reconstruction policy of the government. He died in Washington, Ga., Dec. 15, 1885.

Tooth, one of the hard bodies of the mouth, attached to the skeleton, but not forming part of it, and developed from the dermis or true skin. True teeth consist of one, two, or more tissues, differing in their chemical composition and in their miscroscopical appearances. Dentine, which forms the body of the tooth, and "cement," which forms its outer crust, are always present, the third tissue the "enamel," when present, being situated between the dentine and cement.

The incisors, or cutting teeth, are situated in front, and possess a single conical root or fang, and a vertical crown bevelled behind, so as to ter-



FIRST TEETH:
The figures refer to months after birth.



SECOND TEETH:
The figures refer to years after birth.

minate in a sharp cutting edge. These teeth are specially fitted, as their name implies, for cutting the food. In man there are two of these incisors in each side of each jaw (in the pre-maxilla). The permanent incisors, molars, and premolars are preceded by a set of deciduous or milk teeth, which are lost before maturity, and replaced by the permanent ones. In herbivorous animals they crop the herbage; in rodents (the rabbit, hare, rat, beaver,

etc.,) these teeth are very much developed, and differ from any other teeth occurring in mammals in this respect, that their growth continues throughout life; and if their length does not constantly increase, it is because their free extremity or edge is worn down by trituration as fast as they grow at the base from their roots.

The canines (so called from their prominence in the dog) come next to the incisors. Their crown is rather conical than wedge-shaped, and their fang sinks more deeply into the jaw than in the case of the incisors. In all carnivorous animals they are largely developed, being obviously formed for tearing the flesh of their prey. In man there is one canine tooth in each half-jaw; and there is never more than this number in any of the lower animals.

The premolars (known also as bicuspids and false molars) come next in order to the canines; they are smaller than the latter, and their crown presents two pyramidal eminences. In man there are two premolars in each half-jaw. Their function more nearly approaches to that of the true molars behind them, than to that of the canines.

The true molars (or multicuspids) are placed most posteriorly. They are remarkable for their comparatively great size, the square form of the upper surface, on which are from three to five elevations or cusps, and for their short root, which is divided into from two to five branches, each of which is perforated at its extremity. They appear first in the permanent set. In man there are three molars in each half-jaw, the posterior one being termed the wisdom tooth, from its being cut the latest; they are especially employed for grinding the food, under the action of the muscles of the lower jaw.

The teeth are so admirably adapted for the special purposes which they are called on to fulfill that it is generally easy, from a careful examination of them, to say to what class of animals they belong, and to draw various conclusions regarding the habits and structure of the class generally. Thus, in carnivorous animals the molars are not grinding teeth, but present sharp cutting edges, and those of the upper and lower jaw overlap each other, resembling a pair of scissors in their action. In insectivorous animals the molars have a tuberculated surface, with conical points and depressions, so arranged as to lock into each other. In frugivorous animals, living on soft fruits, these teeth are provided with rounded tubercles, while in herbivorous animals they have a broad, rough surface, resembling a millstone.

There is also a close connection between the articulation or joint of the lower jaw and the nature of the food used by the animal. Thus, in purely carnivorous animals, in which the teeth simply tear and cut the food no grinding motion is required, and the jaw is capable only of a simple hinge-motion in the vertical plane; while in herbivorous animals the joint is so constructed as to allow of extensive sliding and lateral motion of the lower molar teeth upon the upper. In man both the form of this articulation and the general character of the teeth point to an intermediate position in relation to food, and form a physiological argument for the mixed diet which general custom has decided to be most natural to our species.

Decay of the teeth is rarely met with on smooth surfaces exposed to the friction of food and the direct washings of the saliva. It usually begins in some pit or groove in the enamel or between the teeth, such points forming a lodgment for the development of the organisms. Once the enamel has been penetrated the decay proceeds more rapidly, spreading laterally beneath the as yet healthy enamel and toward the pulp. The more dense the structure of the tooth the more directly does the decay penetrate in the direction of the pulp, though its process is not so rapid and its tendency to spread is less.

Topaz, a mineral, ranked by mineralogists among gems, characterized by having the luster vitreous, transparent to translucent; the color yellow, white, green, blue. It is harder than quartz. It is a silicate of aluminum, in which the oxygen is partly replaced by fluorine. It occurs massive and in crystals. Topazes occur generally in igneous and metamorphic rocks, and in many parts of the world,

as Cornwall, Scotland, Saxony, Siberia, Brazil, etc. The finest varieties are obtained from Brazil and the Ural Mountains.

Tope, popular name for a fish belonging to the shark species, and familiar on many coasts. The common tope is widely distributed throughout all temperate and tropical seas, ranging as far as California and Tasmania. It is about six feet long, dark ash gray above and white below. It is often called the miller's dog and penny dog, though, according to some authorities, the first name is properly applicable only to young fish.

The word "tope" is also applied to certain sacred monuments in India, its original meaning having evidently been a "tumulus" or relic-mound.

Tophet, in Scripture, a place in the immediate vicinity of Jerusalem, considered by Milton to be identical with the valley of Hinnom, but described in Scripture as in that valley. It was S. E. of Jerusalem, and had been prepared of old for some king of Israel, or for Moloch. Whatever its primary design, "high places" were erected there, and it became the chief seat of the worship of Moloch in Palestine. It became a burial ground, ultimately overcrowded with bodies.

Topography, the "description of places," a detailed account of the superficial features of a tract of country, of any natural object such as a hill or river, or of a city, street, or public building. Topography is distinguished from geography in being descriptive and more detailed.

Topography, Military, the minute description of places with special reference to their adaptability to military purposes. It is the business of topographical engineers of the army in time of peace to secure all possible information of countries which may subsequently become theaters of war.

Topolobampo Colony, the name of a coöperative enterprise founded by Americans in 1887 on Topolobampo Bay, Sinaloa, Mexico. They established two settlements, one on the N. shore of the "Strait of Joshua," "Topolobampo," and another, "Vegaton," on the Fuerte river. These town sites occupied respectively about 18,000 and 1,500 acres, and were about 35 miles apart. The colonists surveyed and laid out about 18,000 acres on the N. shore of Topolobampo Bay into avenues, streets, walks, parks, circles, quays, drives, etc., the public areas occupying about 40 per cent. of the whole. The experiment was a failure and the colony was abandoned in 1891. It was an attempt to realize Edward Bellamy's social city, described in "Looking Backward."

Torbert, Alfred Thomas Archimedes, an American military officer; born in Georgetown, Del., July 1, 1833; was graduated at the United States Military Academy in 1855. He was commissioned colonel of the 1st New Jersey regiment in September, 1861, and was promoted captain in the 5th United States Infantry in the same month. In the latter half of 1862 he won distinction in the battles of Manassas and Crampton's Gap; was made Brigadier-General of volunteers on Nov. 29, of that year. In August, 1864, he became chief of cavalry of the middle military division and, under Sheridan had command of three divisions. He particularly distinguished himself on Sept. 19, 1864, when he took part in routing the enemy at Winchester, and on Oct. 9, won the cavalry battle at Tom's river. On Dec. 22 and 23 he had command at Liberty Mills and Gordonsville. In March, 1865, he was brevetted Major-General, U. S. A. for gallantry during the war. He served as consul-general to Paris in 1873–1878. He was drowned Sept. 30, 1880, while a passenger on the steamer "Vera Cruz," which foundered off the coast of Florida, while on her way to Mexico.

Torbert, John Bryant, an American topographic draughtsman; born in Washington, D. C., May 8, 1867; was graduated at the Law Department of Columbia University in 1888; was admitted to the practice in the Supreme Court of the District of Columbia in 1889. He subsequently became eminent as a draughtsman; was engaged in the United States Geological Survey in 1886–1893. In the latter year he was transferred to the topographic office of the United States Postoffice Department. He became identified with the Geological Society of Washington and the National Geographical Society.

Tornado, a whirlwind, usually coming on suddenly, continuing but a brief period and covering only a small area. It is generally accompanied by rain, lightning, and thunder. It is of the same type of storm as a cyclone, but more local, covering a smaller area, and generally less violent, though still sufficiently so to be highly dangerous. The term tornado is used specifically of rotating or spiral storms in the South Indian Ocean, and those on the coasts of Africa and North America.

Tornado Alarm, a barometer which automatically sounds an alarm when there is a sudden change of atmospheric pressure, such as occurs in advance of a tornado, cyclone, or wind storm. This alarm is given some two minutes before the first blasts of a storm occur. Ordinary storms have no effect at all on the apparatus.

Tornos, Alberto de, an American educator; born in Carinena, Spain, April 9, 1821; settled in Porto Rico in 1845 and served there as director of the seminary of teachers. He removed to the United States in 1848, and was Professor of Languages at Spring Hill College, Ala., in 1848–1851. Later he accepted the chair of languages at the University of Louisiana, where he remained for many years. He died in New York city, March 22, 1887.

Toronto, a city and capital of the province of Ontario, Canada; on Lake Ontario. Its site is low, but rises gently from the water's edge to a height of about 100 feet. The bay of Toronto, an arm of Lake Ontario, on the S. of the city, affords a commodious and excellent harbor, capable of receiving the largest lake vessels.

Toronto has various manufacturing interests, including several engineering plants and iron foundries, soap works, an immense distillery, a number of breweries, rolling mills, car shops, tanneries, carriage factories, machine shops, cabinet factories, spice mills, car wheel works, pork packing plants, boot and shoe establishments, sash and door, and sewing machine factories, etc. The city has large facilities for an extensive lake traffic. There is regular steamboat connection with all lake ports as well as those on the St. Lawrence river, making the city one of commercial importance.

Toronto was founded in 1794 by Governor Simcoe. The town was captured in 1813 by the Americans under General Pike, who was killed during the attack. Since that period it has made steady progress. Pop. (1891) 181,220; (1901) 207,971.

Torpedo, a case filled with dynamite, gun cotton, or other high explosive, that may be exploded at the will of the controlling party, on land, in the air, or in the water, or by contact with the enemy's vessel. When torpedoes are of the movable kind they are called automobile torpedoes; those which are anchored or stationary are called mines, and may be either on land or in the water. When torpedoes are thrown through the air they are called aerial torpedoes.

The Whitehead torpedo, which has been adopted by all the leading governments of Europe and is in general use in the United States navy, is a cigar-shaped projectile with a little propeller at one end. The shell or case is of metal, from 15 to 25 feet long and from 8 to 15 inches in diameter. It is divided into three compartments. The first contains the high explosive. The middle compartment is a strong air chamber with air under a pressure of 1,000 to 1,500 pounds to the square inch. The third or aft compartment contains the propelling apparatus, which is run by the air from the second. These torpedoes are shot from tubes either forward, aft or midships of a war vessel by means of compressed air. They travel with the velocity of 20 to 30 knots an hour for about 800 yards. The torpedo is exploded by its impact against the sides of a ship. From 1877, when this torpedo first came into notice, till 1898, when the Spanish-American War broke out, there were only 12 instances where it was employed in actual warfare. In five cases the torpedo hit and destroyed the vessel at which it was aimed.

Other types of torpedoes are the Sims-Edison, the Victoria, the Patric, and the Nordenfeldt. Many plans have been devised to protect ships from torpedoes, but none seem more effective than the nets made of heavy metal which are suspended on booms from the ship's side when she is at anchor. When she is moving she throws out

her own torpedoes which explode those in the channel ahead.

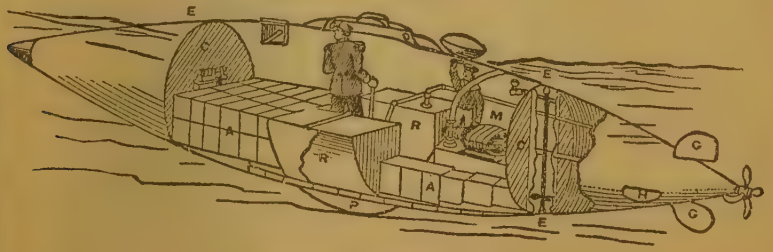
Torpedo Boats, small vessels built for speed and fitted with tubes for firing torpedoes by either compressed air or gunpowder. They are of two classes: those with powerful engines designed to steal on an enemy under cover of darkness, and those which can be used on the surface or submerged to do their work unseen beneath the water. The torpedo boat destroyer does not differ essentially from the torpedo boat, except in its greater speed and its power, owing to its greater weight, to maintain that speed in the face of a considerable sea. Its armament is also heavier and its guns of longer range. In the Spanish-American War, Admiral Cervera had three torpedo boat destroyers in his ill-fated squadron and all were destroyed by the American ships, two of them, the "Pluton" and "Furor," at Santiago, by the converted yacht "Gloucester."

Torpedo-boat Destroyer, a torpedo boat of a most formidable kind, designed for the destruction of ordinary torpedo boats. The destroyers are usually armed with one 12-pounder gun and from three to five 6-pounder guns, besides their equipment of torpedoes, and carry a crew of four officers and about 40 men. They are capable of 30 knots an hour, and as they carry from 70 to 100 tons of coal, can make a voyage of 1,300 to 1,500 miles without recoaling.

Torque, in archæology, a twisted collar of gold, or other metal, worn around the neck, in ancient times by the people of Asia and the N. of Europe, and apparently forming a great part of the wearer. Among the ancient Gauls gold torques appear to have been so abundant that

TORQUE.

about 223 B. C. Flaminius Nepos erected to Jupiter a golden trophy made from the torques of the conquered Gauls.



AN ELECTRIC TORPEDO BOAT.

A, storage batteries; C, bulkheads; E, vertical tubes, with horizontal propellers; G, rudders; H, horizontal fin; M, electric motor; R, water tanks; P, weight to be dropped in an emergency.

Torrens, William Erskine, an American promoter; born in New York city, July 15, 1870. He made a study of manufacturing methods and mill finance. In 1896 he was made foreign commissioner to South America for the National Association of Manufacturers of the United States, and in 1897–1899 was a special commissioner for the same to foreign countries. He traveled in every country of the world studying the opportunities for introducing American manufactures into each.

Torrey, Bradford, an American author; born in Weymouth, Mass., Oct. 9, 1843. He was educated in the public schools, taught two years, then entered business in Boston. In

1886 he became assistant editor of the "Youth's Companion." He was a close student of birds, and wrote largely on this subject for the magazines.

Torrey, John, an American botanist; born in New York city, Aug. 15, 1796; was graduated at the College of Physicians and Surgeons; practised in New York city, devoting his leisure principally to the study of botany. He was assistant surgeon in the United States army, and acting Professor of Geology, Mineralogy, and Chemistry at the United States Military Academy in 1824–1828; and Professor of Chemistry at Princeton College in 1830–1854. He was one of the founders of the New York Academy of Science (under the name of the New York Lyceum of Natural History) in 1817, and president of the Torrey Botanical Club in 1824–1826 and in 1838. When the Geological Survey of New York was organized in 1836 he was made botanist, and held that post for several years. In 1860 he presented his herbarium, containing about 50,000 specimens, to Columbia College. He died in New York city March 10, 1873.

Torrey, Joseph, an American clergyman; born in Rowley, Mass., Feb. 2, 1797; was graduated at Dartmouth College in 1816 and at the Andover Theological Seminary in 1819. He was Professor of Greek and Latin in the University of Vermont in 1827–1842 and of Philosophy in 1842–1867, and was president in 1862–1866. He died in Burlington, Vt., Nov. 26, 1867.

Torsion, in mechanics, the force with which a body, as a thread, wire, or slender rod, resists a twist, or the force with which it tends to return to its original state on being twisted. If a slender rod of metal be suspended vertically, so as to be rigidly fixed at the point of suspension, and then twisted, through a certain angle, it will, when the twisting force ceases to act, untwist itself or return in the opposite direction with a greater or less force or velocity, till it comes to rest in its original position. The limits of torsion within which the body will return to its original state depend on its elasticity, and the force with which it tends to recover its natural state is termed elasticity of torsion.

In surgery, the twisting of the cut end of a small artery in a wound or after an operation, for the purpose of checking hemorrhage. The bleeding vessel is seized by an instrument called torsion forceps, drawn out for about a quarter of an inch, and then twisted round several times.

Tortoise, in the wider sense, are sluggish reptiles, long-lived, and extremely tenacious of life under adverse surroundings, and have survived from remote antiquity while higher animal types, formerly contemporaneous with them, have become extinct, and have been succeeded by very different forms. They have an osseous exoskeleton, which is combined with the endoskeleton to form a kind of bony case or box in which the body of the animal is inclosed, and which is covered by a coriaceous skin, or, more usually, by horny epidermic plates. All the bones of the skull except the lower jaw and the hyoid bone, are anchylosed. There are no teeth, and the jaws are cased in horn, so as to form a kind of beak. Tongue thick, and fleshy; heart three-chambered, ventricular septum imperfect. The lungs are voluminous, and respiration is effected by swallowing air. All will pass prolonged periods without food, and will live and move for months after the removal of the entire brain.

The most familiar example of true or land tortoises is the dry land terrapin of the Southern States. Like all the members of the family, it has a buckler covering its back, and another beneath the abdomen, which together are called the shell; they are united and solid, and have openings in front and behind for the neck, limbs, and tail. The tortoise crawls very slowly, withdrawing its head and limbs within the shell when alarmed, and remaining passive till the danger has passed. It is found in the countries bordering on the Mediterranean, and is said to range as far N. as Switzerland and the S. of France. It is about 12 inches long; the scales are granulated in the center, streaked on the margins, and spotted or marbled with black and yellow. But the most interesting forms are gigantic tortoises formerly

found in great numbers in the Mascarene and Galapagos Islands. When discovered these islands were uninhabited by man or any large wild animal; the tortoises therefore enjoyed perfect security, and this, joined to their extraordinary longevity, accounts for their enormous size and their vast number. Five species of this group are known, and two of them, the gigantic land tortoise of Aldabra, and the Abingdon Island tortoise, grow to enormous size. A specimen of the first named weighed 870 pounds, and though known to be more than 80 years old, was still growing at the time of its death.

In military terms, a method of defense, used by the ancients, formed by the troops arranging themselves in close order and placing their bucklers over their heads, making a cover resembling a tortoise shell; a testudo.

Tortoiseshell, a popular name for the partial or entire outside covering of the tortoise and other allied chelonians. It is in the form of thin plates, united together at their edges, and corresponding, to a certain extent, with the underlying bones of the shell. The number, size, position, coloring, and ornamentation of these plates differ greatly even in genera and species. Also the name given to the horny epidermic plates of the hawk's-bill turtle. The largest of these plates are about 18 inches long by 6 broad, and rarely exceed one-eighth of an inch in thickness. Tortoiseshell is semi-transparent, and mottled with various shades of yellow and brownish-red. Its value depends on the brightness and form of the markings. Tortoiseshell is used for making combs, snuff boxes, and many fancy articles; as a material for inlaying ornamental furniture; as a veneer, and as a ground substance in which the precious metals and mother-of-pearl are inlaid.

Tortoiseshell Butterfly, the name given to two butterflies. The small tortoiseshell, one of the commonest of butterflies, is of a bright red-brown, and has on its costal margin three large black spots, beyond the third of which is a white one. The space between the first and third spots is yellow. The large tortoiseshell, the larva of which feeds on the elm, is much rarer. It is deep fulvous, with a broad, dark border. It has no white spot on the costa of the fore wings.

Torture, the infliction of pain. It has been largely used in many countries as a judicial instrument for extracting evidence from unwilling witnesses, or confessions from accused persons, and in the despotisms of the East is still so used; the callousness of torturers and tortured being almost equally remarkable. In ancient Athens slaves were regularly examined by torture. Under the Roman republic only slaves could be tortured; under the empire, torture, besides being much used in examining slaves, was occasionally inflicted even on freemen, to extract evidence of the crime of læsa majestas. Cicero and other enlightened Romans wholly condemned its use. Till the 13th century torture seems to have been unknown to the canon law; about that period the Roman treason law began to be adapted to heresy, the notions on which the ordeal was based contributing to promote its use. At a later period torture came to be largely employed by the Inquisition, and it was only in 1816 that it was prohibited by a papal bull. Its use was universal in the witchcraft trials, and accounts for the strange uniformity in confessions.

American laws do not permit torture in any form, but the victims of lynching are sometimes horribly tortured, and the infliction of torture is common in Spanish America. In China torture is an essential part of the penal system.

Tory, a political party name of Irish origin, first used in England about 1679, applied originally to Irish Revolutionary Catholic outlaws, and then generally to those who refused to concur in the scheme to exclude James II. from the throne. The nickname, like its contemporaneous opposite, Whig, in coming into popular use became much less strict in its application, till at last it came simply to signify an adherent of that political party in the State who disapproved of change in the ancient constitution, and who supported the claims and authority of the king, church, and aristocracy, while their opponents, the Whigs, were in favor of more or less radical changes, and supported the claims of the democracy. In modern

times the term has to some extent been supplanted by Conservative.

Totem, a rude picture of some natural object, as of a bird or a beast, used by the American Indians as a symbol and designation of a family or tribe. A similar practice has been found to prevail among other savage peoples, and some theorists have given it a very wide extension on purely conjectural grounds.

Totten, Charles Adelle Lewis, an American military officer; born in New London, Conn., Feb. 3, 1851. He was a graduate of the United States Military Academy, and for a number of years Professor of Military Tactics at Yale University.

Totten, Joseph Gilbert, an American military officer; born in New Haven, Conn., Aug. 23, 1788; was graduated at the United States Military Academy in 1805 and commissioned 2d lieutenant of engineers. In 1808–1812 he had supervision of the construction of Castle William and Fort Clinton in New York harbor. He was chief engineer of the army on the Niagara frontier during the War of 1812. In recognition of his service at Plattsburg in 1814 he was promoted lieutenant-colonel and chief engineer of the United States army in 1838. About the same time he became supervisor and inspector of the United States Military Academy and discharged the latter duties till his death. When the war with Mexico broke out he was given charge of the engineering operations, and planned the siege of Vera Cruz, in recognition of which he was brevetted Brigadier-General. After the outbreak of the Civil War he was chief of the engineer bureau in Washington. He died in Washington, D. C., April 22, 1864.

Toucan, in ornithology, the popular name of any bird of the genus Rhamphastos. They are all natives of tropical America, and are easily distinguished by their enormous bill, irregularly toothed along the margin of the mandibles. All the species live in pairs in the shade of the forests, occasionally congregating in small parties, but never approaching the human habitations. In the true toucans the ground color of the plumage is

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generally black; the throat, breast, and rump adorned with white, yellow, and red; the body is short and thick; tail rounded or even, varying in length in the different species, and capable of being turned up over the back when the bird goes to roost. They are easily tamed, and bear confinement well, even in cold climates.